FLIGHT

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Sept. 20. Flying Meeting at Chateau des Ardennes, Belgium.
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EDITORIAL COMMENT

THE last Schneider Contest has been held, and the trophy at long last has come into the permanent possession of the Royal Aero Club of the United Kingdom. In these days of universal depression and economy, the end of the series of contests must come as a relief to the hard-pressed Governments of the world. It is, in fact, reported in the Press that Great Britain has approached some other Governments suggesting a common agreement that henceforth there shall be no official participation in contests of this sort. If this story is to be believed, there is a touch of the Gilbertian about it. We can almost picture future meetings of the League of Nations summoned to devise a formula for the prevention of wars and of Schneider contests, and plaintively, though vainly, demanding that all High-Speed Flights should be deplaned. We can well imagine that Great Britain would be the first to reduce the speed of her machines to X00 m.p.h. as a gesture and an example to a world which would persist in flying at Y00 m.p.h.

A Tale that is told

Apart from considerations of expense, we must be, and are, all highly pleased that as the Schneider trophy had to be won outright, the winner is Great Britain. We heartily offer our best congratulations to all concerned. First, of course, in our thoughts, comes the winning pilot, Flight-Lieutenant J. N. Boothman, after whose name we hope that it will soon be possible to write the letters A.F.C. With him we associate the other pilots of the High-Speed Flight. The captain of the flight, Squadron-Leader A. H. Orlebar, A.F.C., has done his work as well as any man could have done it. Flight-Lieutenant George H. Stainforth (who has deserved an Air Force Cross if ever a man has deserved one) also will go down to fame as the breaker for the second time of the high-speed record for the world over a course of three kilometres. He was the senior flying pilot of the High-Speed Flight, and was generally considered the most highly accomplished of a fine band. For that reason, undoubtedly, he was not chosen to fly

round the Schneider course, but was reserved for the record speed flight. In this year the making of the speed record is perhaps a greater honour than the winning of the Schneider contest, and the whole of the flight would certainly have agreed that the highest honour of all should be reserved for Stainforth. At the moment of writing, we are waiting for the results of the flights with the specially tuned engine. Until those are received, we prefer not to say much about the record. At the moment it stands at 379·05 m.p.h. That is 39 m.p.h. faster than the average speed of Boothman's Schneider course. Two years ago Orlebar's record was only 29 m.p.h. faster than Waghorn's time round the course. That difference tells a tale, to which we shall refer below.

In our list of those who deserve congratulations we must next mention Flight-Lieutenant F. W. Long and Flying-Officer L. S. Snaith. They deserve condolences, because they have not been chosen to break any records and so put their names upon the roll of fame. We have not the slightest doubt that had the chance been given they would, either of them, have proved their skill to be as great as that of their more fortunate comrade. They have both worked hard, and have contributed to the work of the team. The success has been due to team work, and doubtless the team cared little which member was chosen to do the work so long as the work was well done. Long, Snaith and Boothman all gave of their best, and contributed in equal measure to the successful result. They deserve equal honour from their countrymen.

Mr. Ransome and Major Bulman of the A.I.D., Flight-Lieutenant Dry, Mr. Lovesey, the mechanics of the firms and the airmen of the flight, to name but a few, all worked like heroes.

We have already mentioned the debt due to the designers of the machine, the engine, and all the accessories, and to Lady Houston, to whose generosity and public spirit this gratifying result is so largely due. Most heartily we repeat our gratitude to all of them.

We admit that we are gratified by the extracts so far received from the Press of foreign countries. All admit the supremacy of British design in high-speed aircraft. We also agree with the comment of the Italian Press that the Schneider record of 340·08 m.p.h. is " modest and mediocre." We understand that orders were given to the selected pilot, first, to make sure of winning the contest by completing the course; secondly, to beat, if possible, the records for the course and for the 100 kilometres; and, thirdly, so long as those objects were achieved, to run no risks whatever. It seems that his speed was restricted by his water temperature, but it is possible that one of the other machines might have been able to make a higher speed. We cannot help supposing that if a foreign machine had also been flying the course our man, or men, would have banked closer round the pylons. In fact, we do not accept the speed which was returned as the best which we could have accomplished if we had had any definite reason to try to do better. In support of our belief we can quote the difference between the speed of Stainforth and that of Boothman, which, as we mentioned above, was 39 m.p.h. Most certainly Boothman was ordered to be " moderate," and his result, therefore, was, we agree " mediocre." He broke two records without having to try too hard.

The concluding contest in the Schneider series has been held. Great Britain has for a third time proved her ability to produce high-speed aircraft and high-power engines better, faster and more reliable than those of any other country, and, as a result, the Schneider Trophy becomes the permanent property of this country. In recording this very satisfactory fact, it is, perhaps, well to look back, to take stock and to attempt to form an idea of whether or not " the game has been worth the candle," technically speaking, rather than from a sporting standpoint.

The Technical Aspect

It is very often said that the high speeds in the Schneider Trophy Contests are due entirely to the modern high-power engines. That this is not so is very readily seen by an examination of the figures of speed and horse-power of the earlier machines and the latest. For example, in winning the Schneider Contest in 1914, Mr. Howard Pixton's Sopwith biplane required approximately 100 h.p. to propel it at a speed of 86·8 m.p.h. If it is assumed that the power required is proportional to the cube of the speed, the same machine would have required something like 6,000 h.p. to propel it at the speed of Boothman's winning Supermarine S.6B. Not that the Sopwith would have been strong enough to stand this. It would, of course, have collapsed. But, according to the cube law, that would have been the approximate power required to attain 340·08 m.p.h.

These figures give some little indication of the improvement in aerodynamic design which is found in the latest Schneider machines as compared with the earliest ones.

But the real technical progress does not by any means end there. The modern speeds are impressive enough in all conscience, it is true, but they are not everything, even in a racing aircraft. Structural strength has been increased beyond anything that could have been contemplated before the war, largely as a result of metal construction. And most important of all is, perhaps, the fact that stability, manœuvrability and controllability have been retained in these " projectiles," while their behaviour on the water is far ahead of that of the early Schneider seaplanes. It is often said that these racing seaplanes require ideal water conditions for their safe operation. While that is largely true, it is worth bearing in mind that they are probably, for all their high alighting speed, at least as seaworthy as were the early machines.

On the engine side, no one will deny that enormous progress has been made as a direct result of the Schneider Contests. That the Rolls-Royce engineers should have been able to produce an engine which will develop such high power for so small weight, and yet have the reliability to give its full power over more than 200 miles is a triumph. But for the Schneider Contests it is extremely doubtful that the attempt would have been made. And no one would deny that the lessons of building and running Schneider engines can, and will, be applied to the production of more immediately useful types.

On the whole, the Schneider has, we think, been worth while. It had reached the limits of its usefulness, perhaps, and everyone will be rather glad that it is finished with. The next few years can now be devoted to the application of the knowledge gained.

THE END OF A HISTORIC CONTEST

SCHNEIDER TROPHY WON BY GREAT BRITAIN

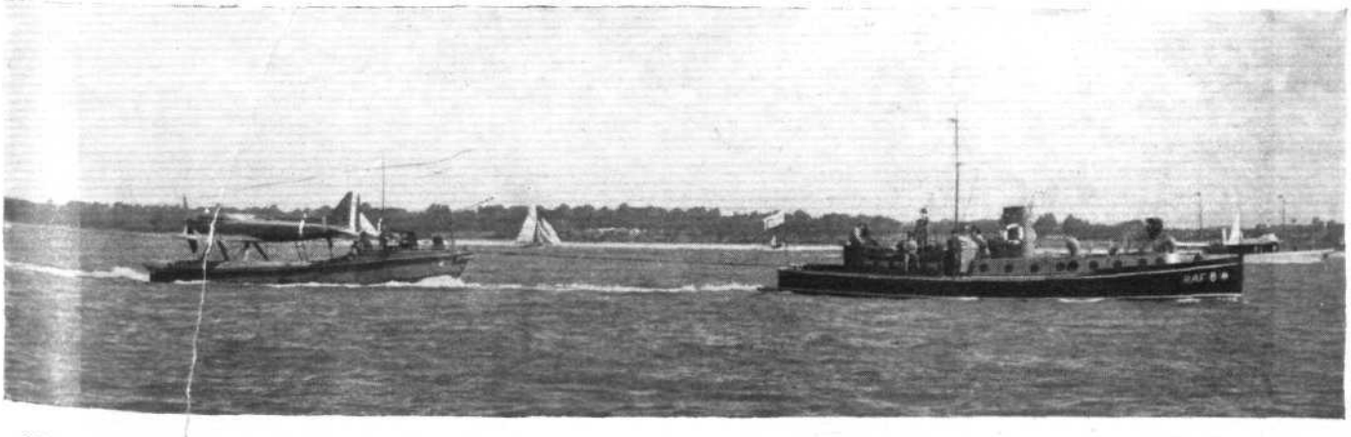
By MAJOR F. A. de V. ROBERTSON, V.D.

I HAVE seen the last Schneider Trophy Contest, and I am very glad to have seen it. It has been my lot to witness four contests in this remarkable and historic series, and also to follow with some degree of intimacy the fortunes, hopes, and fears of the various British pilots, and manufacturers for some years past. In my personal recollections two occasions stand out most prominently, the depression caused by our defeat at Cowes in 1923, and the exultation of our glorious triumph at Venice in 1927. The Cowes contest of 1923 was the turning point in the history of the Schneider. The Americans at that time were setting to work in a characteristically methodical manner to collect every aeronautical record and victory which was worth collecting. Before that year the Schneider had been a friendly affair, contested by manufacturing firms of France, Italy and Great Britain, with the test pilots of the firms flying the machines. The entry by the U.S. Navy altered its complexion altogether. Henceforth it was to be the great speed trial between the Governments of the nations which aspired to lead in aeronautical development. Moreover, the type of machines was changed by the issue of that contest. Previously considerable regard had been paid to the obvious wishes of M. Jacques Schneider that the contestants should be seaworthy seaplanes. Flying boats were much favoured by the entrants, on account of their supposed greater seaworthiness, and Bologna, de Briganti, and Biard, had all won with flying boats. The victory of Rittenhouse in 1923 with a Curtiss float-plane made it certain that for the future only float-planes would have a chance of winning a Schneider contest. At the banquet which followed the 1923 contest I gazed regretfully at the Trophy, a long, last, lingering, farewell. Everyone does not admire the Trophy as a work of art, and I am not sure that I do so myself. But that night at Cowes I feasted my eyes upon what seemed the most desirable of possessions, uncertain whether I should ever look upon it again. It was going to cross the Atlantic. It was going, perchance, the way of the America Cup. It would certainly cost a lot of money to bring it back. Would a new Sir Thomas Lipton arise to foot the bill, and, if one did, would he have any better fortune than had fallen to the lot of his yachting prototype? The Americans were so determined and so tenacious, and their designs at that time seemed so hopelessly in advance of ours, that our spirits sank, despite the brave words of Mr. Scott Paine and Commander Bird. So I sighed "Farewell, little Winged Spirit! I hope they will treat you kindly on the other side. But may I live to see you kiss once more the waters of Britain's silver sea!"

FLIGHT-LIEUTENANT BOOTHMAN'S SPEED OVER SCHNEIDER COURSE

	Lap Speeds		Cumulative Speeds	
First Lap	.. km./h.	552·15	One Lap .. km./h.	552·15
	.. m.p.h.	343·1	.. m.p.h.	343·1
Second Lap	.. km./h.	551·5	Two Laps .. km./h.	551·8
	.. m.p.h.	342·7	.. m.p.h.	342·9
Third Lap	.. km./h.	547·1	Three Laps .. km./h.	550·3
	.. m.p.h.	340·0	.. m.p.h.	341·9
Fourth Lap	.. km./h.	544·5	Four Laps .. km./h.	548·8
	.. m.p.h.	338·3	.. m.p.h.	341·0
Fifth Lap	.. km./h.	546·5	Five Laps .. km./h.	548·3
	.. m.p.h.	339·6	.. m.p.h.	340·7
Sixth Lap	.. km./h.	546·1	Six Laps .. km./h.	548·1
	.. m.p.h.	339·4	.. m.p.h.	340·5
Seventh Lap	.. km./h.	543·5	Seven Laps	547·3
	.. m.p.h.	337·7	.. ..	348·08

The next time I set eyes on the allegorical spirit of marine aircraft was in the Piazza of Venice. It was very good to see it in Europe again, and the allegorical figure, essentially French in its conception, looked more in keeping with the Italian setting than with "England's green and pleasant land." I hailed it as an old friend whom I had not met for four years, and I longed with an intense longing to see it back in the dingy, comfortable lounge of the Royal Aero Club in Clifford Street. Well, we brought it back in that year, and here it has remained ever since, and now it is to remain over here for all time. It is hard to believe it. The impressions of the 1923 defeat were deep, and that



GOING OUT: Boothman's Supermarine Rolls-Royce S.6B being towed to the starting point on one of the special pontoons. (FLIGHT *Photo.*)

Great Britain should have beaten the victor of the formidable Americans seems almost too good to be true. We have beaten the world, and beaten it so thoroughly that at last none could be found to come and dispute our title.

So, although the element of a race was absent this year, I felt impelled to go to Ryde to see the very last Schneider contest. The last of the series was sure to be an occasion to remember. In one way I could not restrain a feeling of regret. Schneider contests brought so many memories of good times, bad times, anxieties, defeats, fiascos, good luck, bad luck, and victories, that I really felt sorry that I should never go through the same times again. One outstanding memory will always be the meetings with old friends and new friends in each Schneider year. The difficulties which we correspondents had with the telegraphs in Venice, and the way in which some Italian journalists helped us to surmount them; the anxiety about transport across the lagoon to the Lido; the more painful progress from Hotel Royal Danielli to the Venice Post Office—how C.C.T. did run that night of the rainstorm!—the other problems connected with transport from Calshot to the Isle of Wight—all these make memories which will not be repeated. A foreign journalist on Ryde pier on Sunday last put my feelings into words when he said that now that there would be no more Schneiders we should not have our regular biennial meetings with foreign friends. Still, I must admit that the Schneider has outgrown its usefulness, and it was better to bring that chapter to a close.

CHAIRING THE WINNER: Flt. Lt. Boothman receives enthusiastic support on his return to Calshot after completing the Schneider course.

To be on the safe side, I crossed over to Ryde on Friday evening. It was a perfect evening for flying. The visibility was such that with the naked eye I could see all three pylons as the steamer crossed the Solent. The water was calm, with just enough ripple to guide a pilot when about to land, and the wind was negligible. The great White Star liner *Homeric*, the official headquarters of the Royal Aero Club, was in the mooring opposite Ryde pier. Not far off lay the somewhat ungainly bulk of the aircraft carrier *Courageous*, while further to the east was a large R.M.S.P. oil-burning liner, *Alcantara*. In between was a whole string of warships, and as our steamer passed close to one of them she catapulted a "Flycatcher" off her deck into the air. We had an excellent view of this very interesting operation. It added to my general satisfaction with the prospects of a good performance on the morrow. I went to bed in that frame of mind.

Postponement

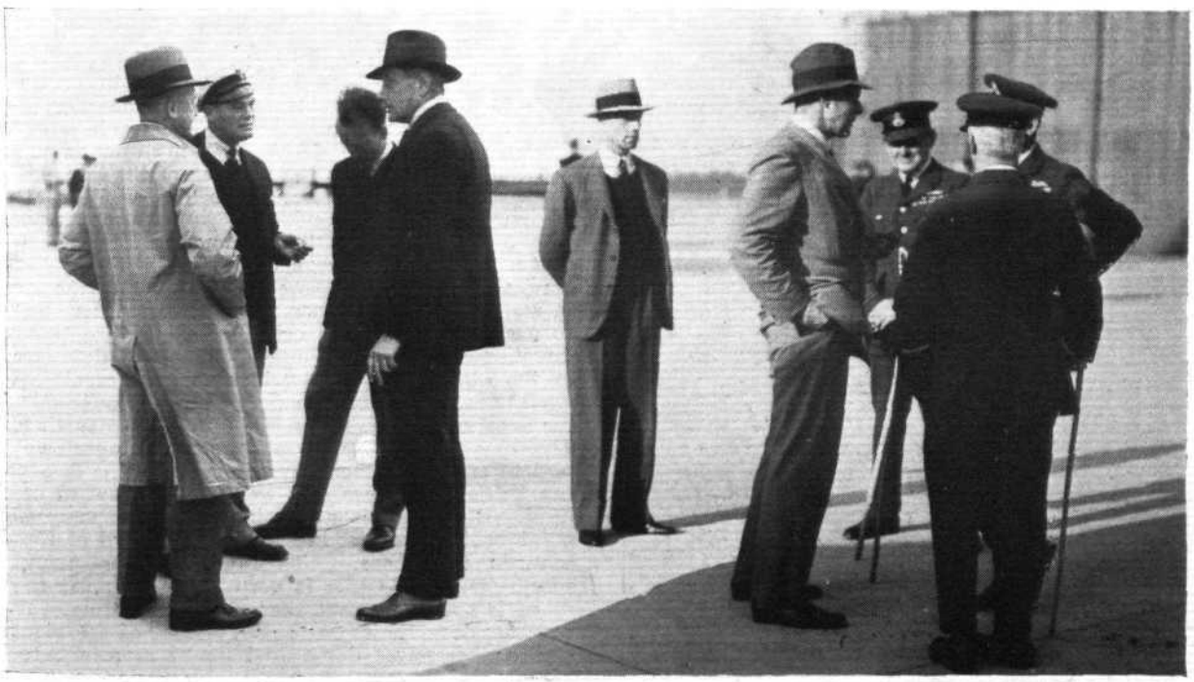
Next morning came the reaction. As the old song said "Oh! what a difference in the morning!" As I got out of bed I saw that the sky was grey, and a glance out of the window showed that it had been raining in the night. It had stopped for the present, but the wind was strong and cold. A depression from the Atlantic had evidently arrived. We had been warned to be on the pier head not later than 11 a.m., so thither I went in not too cheerful a frame of mind. The quarters of the Royal Thames Yacht Club in the upper storey of the pier house had been put at the disposal of the Press. An elaborate

"POSTPONED ON ACCOUNT OF WEATHER": Scene at Calshot on Saturday last. The Schneider machines are wearing their raincoats. (FLIGHT *Photo.*)

post office with high-speed telegraphic machines had been installed there under the direction of the very helpful Mr. Willis, who wanted lots of work and would do anything to help any journalist who was minded to give him some. There was also a line of telephone boxes, some of which had been privately hired by individual newspapers. The flying folk began to gather there, some from Ryde, some from London, some from local newspapers in neighbouring towns. Mr. Victor Paine brought over a load of notabilities from Calshot in his speed boat, and some of them looked very green when they landed, and told stories of the perils of the deep. I learnt afterwards that what they suffered in coming was nothing to what they went through on the return journey. The wind had got stronger, and they rocked to and fro, and began to stagger like drunken men, and were at their wits' end. I quote from memory, and a memory not so good in this respect as that of Mr. Handley Page.

Before long down came the rain again, and up came the fog. Out by the *Courageous* lay two "Iris" flying boats from Mount Batten, rocking most uncomfortably at their moorings. Someone said that they had brought over some French pilots or other notabilities to see the last Schneider. Someone else said that the flying boats had said that those on board them were very seasick. One of them taxied about, much as a man with toothache tramps up and down to relieve the pain. Then one of them took off and flew, but was soon lost to sight in the fog. The fog came down in waves, sometimes lifting again for a space. Sometimes the *Courageous* was clearly visible, and then in a few minutes she would be entirely blotted out from our sight. At intervals the committee at Calshot broadcast intimations that they would make another announcement in a few minutes. At last at 12.30 p.m. the fateful decision was taken that the contest was off for the day. Nothing else was to be expected. It was true that Capt. Jackson had foretold an interval in the afternoon when the average wind velocity would be about 15 m.p.h., but gusting up to 25 m.p.h. That did not sound nearly good enough, and the cancellation was the only possible course to take. The tragedy was that crowds much larger than had been expected had gathered at all points along the course. In 1929 the crowds, large though they were, had not come up to expectations. This year, when comparatively few had been expected, the public decided that it wanted to see the last Schneider, even though there was to be no race. The said public got very wet, and departed disconsolate when the postponement was announced. A postponement is a horrible event in Schneider history. The pilots and the rest of the team have been keyed up, and they have to relax and then key themselves up again. The public is disappointed, and innumerable arrangements are upset. All the elaborate business of clearing the course had to be taken off and then put on again. The mere putting out of the signalling arrangements is a complicated business which takes some two and a-half hours to put into force. The worst feature about it all is that no one knows for certain whether another postponement will be necessary next day. The horrible possibility of day-to-day postponements all through the period of six weeks began

LADY HOUSTON AT CALSHOT: The generous donor of the subscription which enabled Great Britain to build defenders for this year's Schneider Contest being received at the Air Base by Sqd. Ldr. Orlebar, Captain of the British Schneider Team. By the side of Lady Houston is Air Vice Marshal Sir Charles Lambe.



NOTABILITIES AT CALSHOT: From left to right—Mr. Sidgreaves, managing director of Rolls-Royce, Ltd.; Com. J. Bird, of the Supermarine Co.; Col. the Master of Sempill; Air Chief Marshal Sir John Salmond, Chief of the Air Staff; Sir Philip Sassoon, Under-Secretary of State for Air; Col. Sir Francis McClean; Group Capt. Nanson, O.C. Calshot, and Air Vice Marshal Sir Charles Lambe. (FLIGHT *Photo.*)

to occur to the mind. For air correspondents the practical question became the length of time which their papers would require them to wait for the event to come off. Everyone went to bed that night in a very disturbed frame of mind.

The Turn of the Weather Luck

Next day, glorious to relate, the sun was shining in at my bedroom window—and presumably into all other windows which faced the east and had their blinds up. As soon as I was up I went out on to the front. There was a strong northerly wind blowing and the white horses were prancing all over the Solent. Nothing could be done for an hour or two; but the sky was blue and the visibility was wonderful. During the morning the wind went sharply round to due east, and as the day wore on it turned again to a northerly and finally a north-westerly direction. Gradually the white vanished from the sea, and it became all blue. Before mid-day we gathered once more on the pier head. News came over that Capt. Jackson had promised a possible period soon after 12.30. When Capt. Jackson becomes positive, one may put one's shirt on its coming off.

At 11.15 or so the "Atlas" seaplane took off from near Calshot and flew round the course. I was told that it held Orlebar and Squadron Leader Bailey, who were out to look at the water. It was followed by the "Firefly," I believe with Boothman in the cockpit, as he had a very special interest in the landing possibilities of the water. At the same time we observed an "Avro" towing a glider over the Isle of Wight, no doubt well south of the prohibited area. The result of the pilots' reconnaissance was favourable, and it was definitely decided to hold the contest. At noon Mr. Loader and Mr. R. Hall left the pier in a speed boat to man the St. Helen's pylon destroyer, where they were to be official observers.

The Seaworthiness Trial

Meanwhile binoculars had been turned in all directions to see what could be seen from the pier. As the wind moderated, so a haze began to obscure the distance. It was nothing like so thick as the heat haze which hung about during the race two years ago. Just to the left of the Ryde Middle pylon we could see three white shapes above the water. Prolonged inspection showed them to be the three seaplanes on their pontoons. Presently, as we looked again in that direction, only two were to be seen. S.1595 had been launched with Boothman in the cockpit, and now could not be picked up at all. The starting ship, H.M.S. *Medea*, was also out of sight from the pier, hidden behind some other vessel. The loud speaker began to get busy, and Squadron Leader Helmore announced that he thought the gun would go soon. Shortly afterwards he said that it had gone. The report was inaudible, and I for one could not see the puff of smoke. Nor could I pick up the seaplane as it made its first take-off and the formidable feat of landing with the full load of petrol on board. So far as I am aware, Boothman had never before landed a machine with absolutely full load of petrol. The feat had been done once in practice, by Stainforth I believe. However, Boothman made no bones about it, and started his ordeal by a fine display of quality as a pilot. I do not know whether Orlebar had drawn lots in deciding the order in which Boothman, Snaith, and Long should take their places in the contest. Perhaps the fact that Long had had a bit of a cough just before may have accounted partly for putting him in the second reserve machine. He must have got over the cough, or he would not have been allowed even to consider flying a racing seaplane, for a cough in one of those machines might easily cause a crash. At any rate, no criticisms could be made about Boothman's handling of the machine in the preliminary trials.

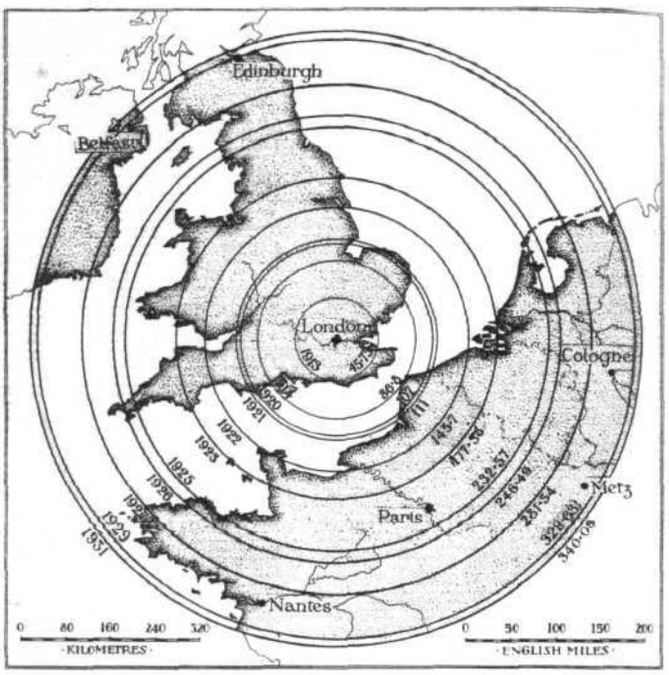
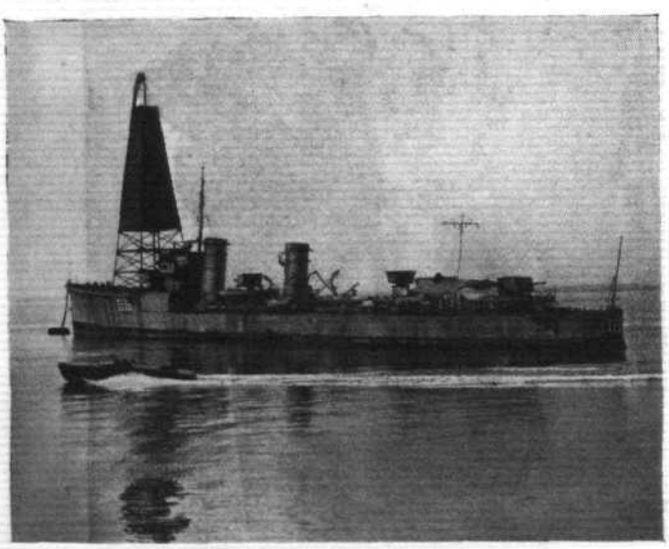


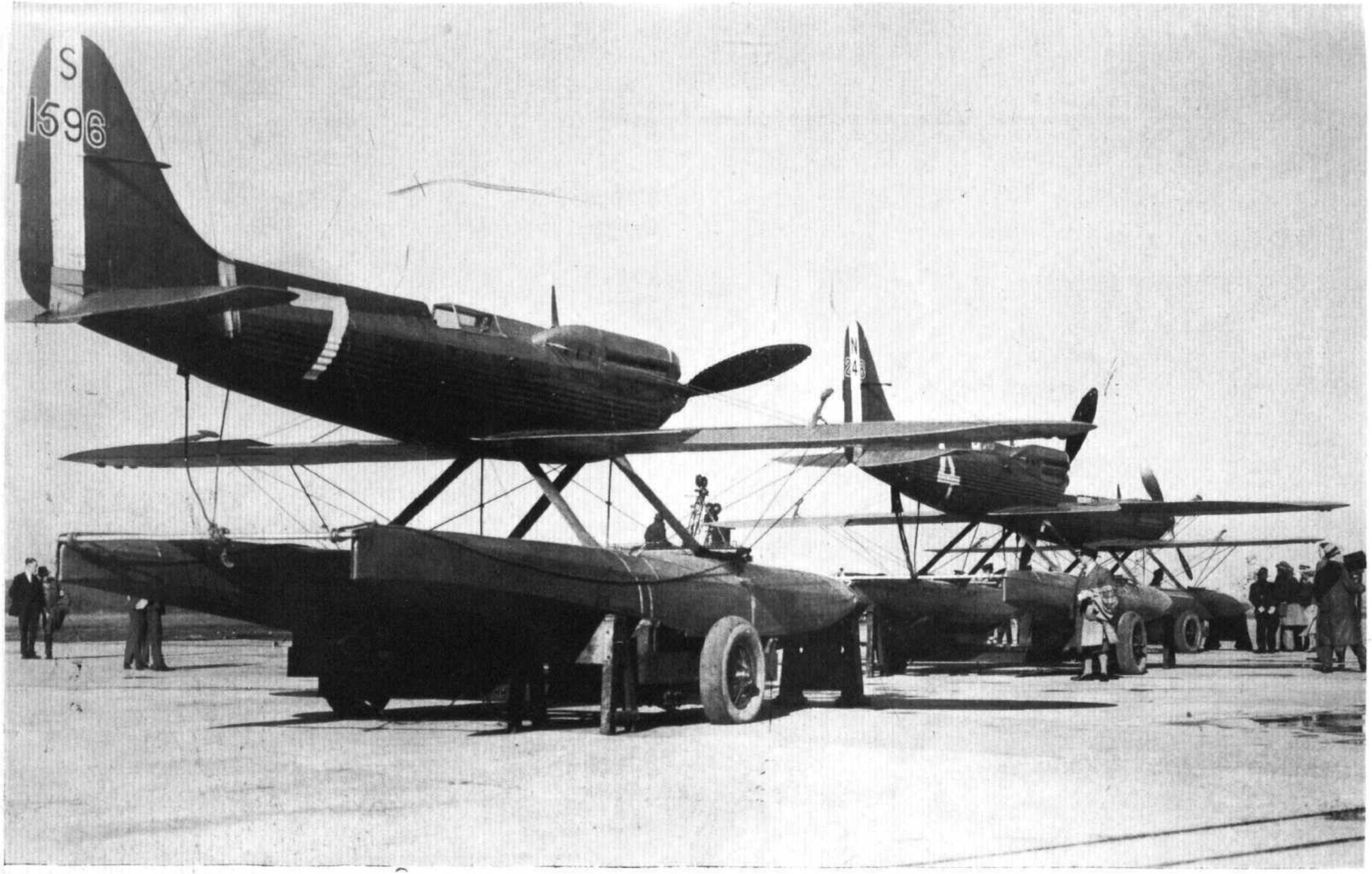
Diagram showing distances from London which Schneider winners could have covered in one hour's flying at the winning speed.



ONE OF THE FLOATING TURNING POINTS: Pylons erected on destroyers formed two of the turning points, the third being placed on the foreshore at West Wittering.

The Start

I got the machine into my binoculars as it rose the second time and turned and climbed in order to dive towards the starting line, namely Ryde pier. The gun went at 13 hr. 2 min. 10 sec. The machine crossed the line at 13 hr. 10 min. 19 sec. In my opinion the greatest thrill of a Schneider is the crossing of the line at the start. Everything has been quiet just before, with an atmosphere of tense stillness. Suddenly we get movement, noise, speed, breaking in on that stillness. The resonant boom of the Rolls-Royce begins to rise in the distance, and gradually and swiftly swells until it fills the whole air. It seems to come at once from all directions at once, and to pervade one's whole being. All eyes are turned in the direction of the sound, and a triangle of dots is discerned in the air. At a speed which seems incredible the dots swell and take definite shape. The two lower dots become the amazingly large floats, the upper one the slim fuselage. The blue and white streaks come diving down for the pier to cross the line at maximum speed. Two years ago the British seaplanes flew well out to seaward of the pier head. Boothman is not doing that. He is crossing at a point behind the pier house, about a third of the distance towards the shore. That is luck for many of the spectators. Ryde pier is very full of people, though the space is so ample that there is no crowding. Many had paid for deck chairs on the very front of the pier and had settled themselves down an hour or more ago to be sure of a good view out to sea. To their disgust, a small passenger steamer had tied up at the pier head right in front of them, and declined to move in spite of a very broad hint from the loud speaker. The captain was distinctly unpopular with the folk on the pier. As



READY FOR ANYTHING: The three British Schneider machines on Sunday morning, September 13. Farthest away is Boothman's S 6B, S 1595. In the centre, the S 6A, N 248, and in the foreground the S 6B, S 1596, on which Flight-Lieutenant G. H. Stainforth established a new world's speed record of 610·01 km./h. (379·05 m.p.h.) over the 3 km. course in Southampton Water. (FLIGHT *Photo.*)

"TOUJOURS LA POLITESSE": The steamer "Southsea" was not exactly popular at Ryde when it elected to plant itself right in front of the spectators on the pier.

Boothman flew behind the pier house, the obstruction to the view northward caused by this steamer did not matter, and actually many people got a very good view of the seaplane who would not otherwise have had such luck.

Between Ryde and Seaview the coast of the Isle of Wight bulges outward into a rough promontory of low hills. Among those hills there is a slight depression which from Ryde pier looks like a miniature pass. Boothman headed over the land for this pass. He was rather high up as he crossed the pier, I should say about 400 ft. He climbed a little more to clear the rising ground, and then commenced a gradual, very wide, banking turn for the pylon at St. Helen's. He dived somewhat as he made from the hills for the pylon, but as his bank increased in steepness, he allowed his machine to climb very markedly. I know from watching Boothman at practice that he can turn sharply and hold his machine down as he does it; so he was evidently flying according to the plan agreed upon by the whole High-Speed Flight as the best compromise between taking too long a course round a turn and losing speed by banking too steeply and holding the machine hard down. I knew beforehand that the turns would be taken wide in the race, but even so I thought that Boothman's interpretation of a wide turn was very liberal. Certainly there was not the slightest chance of his cutting a corner and being disqualified. The flattening out after the turn was also a very gradual process. It was said afterwards that the turn aimed at had a radius of 800 yards. Boothman must have been on the bank for several miles, and each lap that he made must have been very considerably more than 50 kilometres.

After passing St. Helen's pylon the machine was hidden from our sight by the pier house, and I am not sure if the West Wittering pylon was visible at all from Ryde. The heat haze was beginning to thicken, though it never reached the density of the race day of 1929. We next became aware of Boothman by the roar of his engine reaching us from the Hampshire shore, and there was the little racer speeding along the front over Southsea, Portsmouth, Gosport, to the rounded cape by Browndown anchorage. Those familiar with Schneider seaplanes knew that we had to look some 200 to 300 yards in front of the noise to spot the machine, but to those who were watching high speed for the first time this came as a stunning surprise. At that distance we could not connect the sight and sound in our minds. The seaplane seemed a thing apart. We lost the impression of rush and dash as it passed along the opposite shore. It looked extremely businesslike; just intent on eating up the miles. But it did not take very long before it reached the spot by Browndown anchorage and once more began to bank and turn.

As the seaplane began to bank, it lost its appearance of purely mechanical movement, and once more gave indication of human direction. Once again Boothman made a very wide turn. The sun glinted on the top of the silvery wings. As he turned he must have got the sun more or less in his eyes, and probably this worried him a little. In his seven laps he kept varying his turn round the Ryde Middle pylon. No two turns were exactly the same, and

THE LANDWARD TURNING POINT: The beach at West Wittering. (FLIGHT *Photo.*)

this we attributed to the sun being in his eyes. On this turn he climbed very considerably. Then he flattened and straightened out, and dived once more for Ryde pier.

The Second Lap

Boothman finished his first lap by crossing the pier at exactly the same spot as before. Once again we enjoyed the excitement of seeing the dots grow into a seaplane, of feeling rather than hearing the universe filled with the resonant booming of the Rolls-Royce, of admiring the fleeting streaks of blue and white, and of exhilarating in all the sensations aroused by speed. There was general relief that one lap had been safely completed; one-seventh of the ordeal was over. Boothman did not look like doing anything very sensational in the way of speed round the course, but, on the other hand, he did not look as if he could possibly make any disastrous mistakes. The methodical way in which he crossed the pier at the same spot as before, made for the same pass in the hills as before, and commenced his banking turn at precisely the same spot and the same moment as before, all showed that he was flying very steadily and knew what he was about. Certainly there was a long trail of very black smoke behind his machine. That is a common enough phenomenon among aircraft, and particularly when a racer has just started off. In this case it had not died down as we were accustomed to see such trails of smoke die down after a while; it continued to follow the machine throughout the race, and we wondered why.

ON RYDE PIER: This was the starting and finishing point of the Schneider course.

While Boothman was out of our sight going for West Wittering, the loud speaker announced the time for the first lap. He had covered the 50 kilometres (and in reality a good deal more) in 5 min. 26 sec., which gave a speed of 343.1 m.p.h. That was good enough. Waghorn's average had been 328.63 m.p.h. We remembered that Waghorn had increased his speed after his first lap, as his engine settled down to its work, and we hoped that Boothman would do likewise. He was flying slightly lower than on his first lap, and that was to the good. With the regularity which was typical of his whole flight, except at the one turning point of Ryde Middle, he commenced his bank and turn at the same spot over Browndown anchorage. His turn round Ryde Middle was, however, again wide, and seemed to lose more ground than was absolutely necessary. The sun, of course, had not become less irritating. Still, all things considered, we hoped for a rather better time than in the first lap, and were just a little disappointed when it turned out that the second lap had taken two-fifths of a second longer than the first lap. That seems a very inconsiderable amount. Boothman may have made up more than that by flying lower, but have lost more than that by a slightly wider turn round Ryde Middle. But the difference of 2/5 sec. on the lap reduced the miles per hour for that lap to 342.7 m.p.h., and the average for the two laps to 342.9 m.p.h. This, as it turned out, was to remain the world's record for the 100 kilometres in a closed circuit with a flying start.

Subsequent Laps

The third lap showed that Boothman was keeping the same admirable regularity over almost the whole course. When a man cannot see straight ahead it must be extraordinarily difficult to cross the same point over Ryde pier five times running as Boothman did. This time Ryde Middle seemed especially troublesome. He continued past it in a wide gentle bank, as if he had not seen it at all and was doubtful whether he had passed it. Suddenly he seemed to realise that he had done so, and quickly pulled his machine round in a rather steep banking turn to get on to his run for Ryde. This lap took 5 min. 29 sec. and showed a lap speed of 340 m.p.h., a drop of 2.7 m.p.h. from the second lap. The truth was, as appeared afterwards, that Boothman was flying according to his water temperature, and had eased his engine slightly after the first two laps.

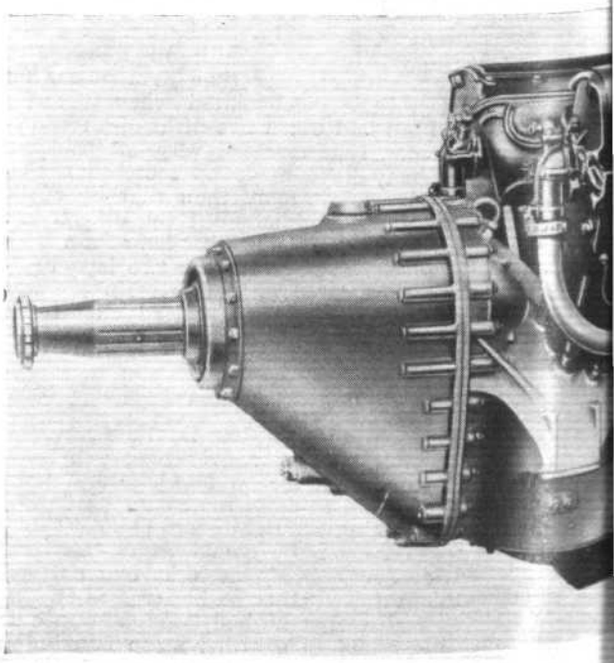
The fourth lap looked to us on the pier to be the best flown of all. Boothman was noticeably lower over the Hampshire coast, and his bank and turn round the Ryde Middle pylon was neater than his previous ones. None the less, the speed of this lap dropped below the level of 340, namely to 338.3 m.p.h. On the fifth lap he picked up a little to a speed of 339.6 m.p.h.

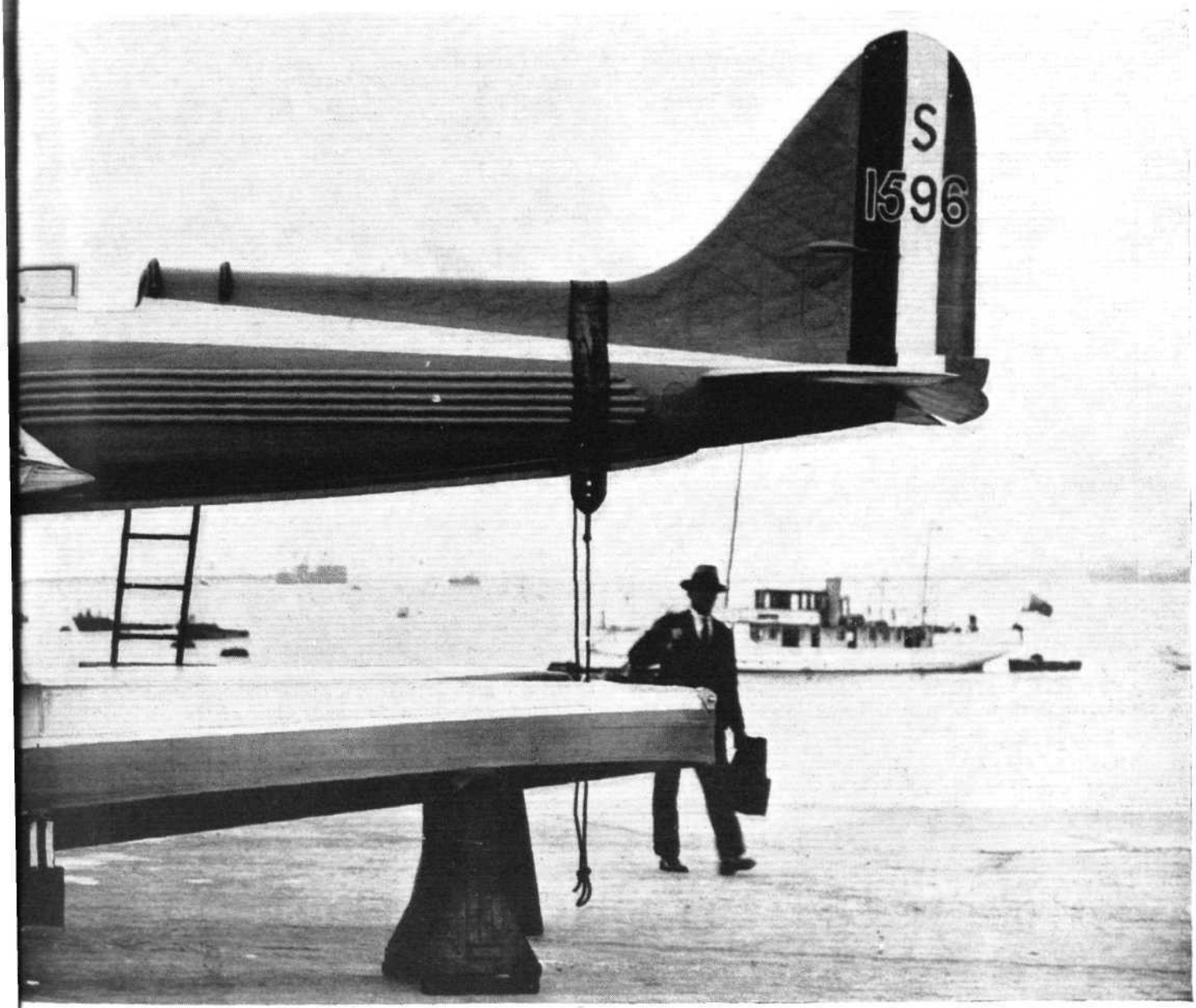
The sixth lap showed the first serious deviation from the regularity with which Boothman had been crossing Ryde pier. This time he flew right over the top of the pier house, and the timekeepers on its summit must have had a real close-up view of the bottoms of his floats. The whole pier, constructed as it is to carry a double railway line and also a double tram line, seemed to vibrate to the sound waves emitted by the engine. The alteration in course did not practically affect the speed of the machine, for the time taken to cover the sixth lap was only one-fifth of a second slower than the fifth lap, and it was covered at a speed of 339.4 m.p.h. On this sixth lap the turn round Ryde Middle was the tightest and best of all the turns round this worrying pylon during the whole race.

The seventh and last lap commenced with a crossing of Ryde pier inland of the pier house (for which the timekeepers were doubtless duly thankful), but not over the spot which he had crossed with such unfailing regularity during the first five laps. I am not sure, but I think that this time he was a bit higher than before when he flew past Portsmouth Town Hall. Ryde Middle was not circumvented quite so well this time, but we were all very glad to see the pilot straighten out for the last time, and open his throttle as he made his last dive for the pier, which had now become the finishing line. This time Boothman flew out to seaward of it, and a great cheer went up as he crossed the line. The steamers sounded their sirens, hats were thrown up, and chairs and handkerchiefs were waved in the air to acclaim the victory of Great Britain in the last Schneider contest, and to do honour to the pilot who had flown so well to win the trophy for her to keep for all time. A couple of months ago the name of Boothman was hardly known to anyone outside the Royal Air Force. Now it is known to all the world, and will go down to history as one of Great Britain's great pilots. He had flown his course according to orders, and with a restraint imposed by those orders and by the temperature of his engine. Despite the handicap of a turn into the sun, he had maintained an admirable regularity on the seven laps of the course. When flying at such a speed for nearly

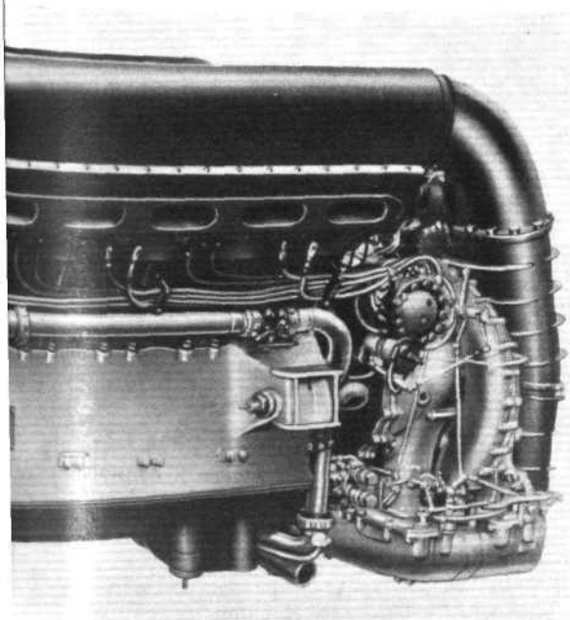
SCHNEIDER WINNER AND WORLD'S SPEED RECORD HOLDER: ABOVE IS SEEN ONE OF THE SUPERMARINE ROLLS-ROYCE S.6B MONOPLANES BUILT FOR THIS YEAR'S CONTEST. THE MACHINE SHOWN IS S.1596 ON WHICH STAINFORTH ESTABLISHED A NEW SPEED RECORD. BOOTHMAN S MACHINE IS IDENTICAL.

THE SCHNEIDER TROPHY WINNER: FLIGHT-LIEUTENANT J. N. BOOTHMAN, WHO COMPLETED THE SCHNEIDER COURSE AT AN AVERAGE SPEED OF 340·1 MILES PER HOUR.





A VERY WONDERFUL POWER PLANT: THE PHOTOGRAPH BELOW SHOWS THE ROLLS-ROYCE "R" TYPE ENGINE FITTED IN THE SUPERMARINE S.6A AND S.6B MACHINES FOR THE 1931 SCHNEIDER CONTEST. DEVELOPING CONSIDERABLY MORE THAN 2,000 H.P., THE ENGINE HAS PROPELLED BRITISH PLANES TO VICTORY.



HOLDER OF THE WORLD'S SPEED RECORD: FLIGHT-LIEUTENANT G. H. STAINFORTH, WHO ESTABLISHED A NEW RECORD BY FLYING OVER THE 3-KM. COURSE AT AN AVERAGE SPEED OF 379 MILES PER HOUR.

40 min. it must be very difficult to maintain regularity and to observe restraint. Boothman well deserved the cheers which went up from the large crowds of onlookers.

The speed of the last lap was 337.7 m.p.h. and the average for the whole course was 340.08 m.p.h.

After crossing the winning line, the pilot took his machine up in a climbing turn, throttled down, and made off for the area where the pontoons were waiting. As he throttled down, we noticed that the trail of black smoke ceased to follow him. He flew off into the heat haze, and made a good landing. Willing hands took charge of his machine, and he was taken ashore at Calshot to receive the congratulations of Mrs. Boothman and of the rest of the High-Speed Flight.

FRENCH VISITORS TO CALSHOT: Members of the French Flying Boat Squadron which visited Mount Batten, Plymouth, being introduced to Air Chief Marshal Sir John Salmond, Chief of the Air Staff, during their stay at Calshot.

THE CONTEST FROM AFLOAT

By "SINBAD THE SAILOR"

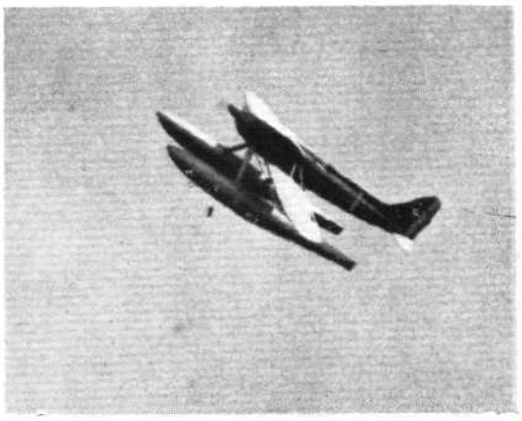
NO one can deny that the Schneider Trophy became the absolute property of Great Britain under circumstances which placed the prestige of British aircraft and aircraft engines on a pedestal from which it can, figuratively speaking, look the whole world in the eye without reservation or equivocation.

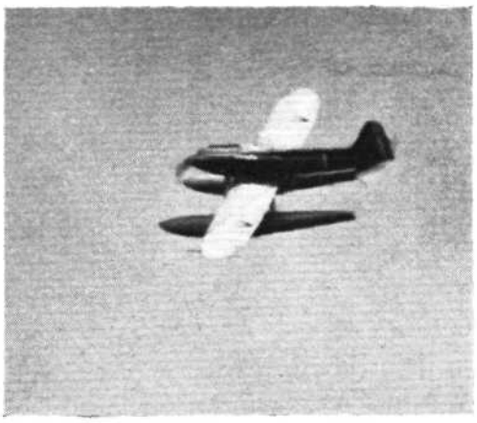
Sunday's events proved conclusively that the boast that our aircraft and engines are supreme is no idle one. Those in charge have been criticised for ordaining that only one of the special aircraft prepared for the race, the Supermarine Rolls-Royce S.6.B's, should fly over the course unless the first machine to do so was unsuccessful in its attempt to retain the trophy for England. It was maintained that they should consider the public to a greater extent and "put up a show" for them by letting all the three machines race each other. We admit that much more might well have been done to let the spectators see some flying, but surely the main reason of the day's racing was to establish, indisputably, the fact that our aircraft were fully up to the task for which they were designed, and, moreover, that they were able to face competition from anyone who cared to oppose them. The decision, therefore, to send Flt. Lt. Stainforth out after the Contest to beat the existing three-kilometre world's speed record was the wisest that could have been made.

Flt. Lt. Boothman left no doubt of our ability to retain the Trophy by a handsome margin, and, moreover, in making his magnificent flight he used full throttle, in so far as the cooling water temperature would allow him to do so, for a considerable part of the course. It could hardly be expected, therefore, that either of the other machines would raise his figures more than a very few miles per hour, if they were to follow him. By flying the three-kilometre course and raising the world's speed record such a large amount, Flt. Lt. Stainforth for his part did the maximum to rub in, as it were, the amazing pitch of perfection to which our engines, and the aircraft that house them, have been brought, and so made the day's events carry far more weight to those who are really interested in aircraft throughout the whole world.

It only needs very little thought to see that such a performance as Sunday's will benefit the country far more than the satisfactory entertainment of an indigenous crowd would have done. What we need most, at this present time, is to increase our exports, and the establishment of our aircraft and engines on such a high pinnacle of superiority will do a great deal towards achieving this object. The wonderful output of the standard Rolls-Royce "Kestrel" engine can undoubtedly be traced to the influence exerted by the successful engines in the Schneider Trophy Contest of 1929, and it is this engine which helps to give our Fairey "Fireflies" their amazing performance. The result in this particular case was the large order recently secured by the Fairey Aviation Co., Ltd., for the supply of Service Aircraft to Belgium and other countries. Similar cases could be quoted for other aircraft and engines, but this one will serve to show that by establishing records and maintaining an unapproachable degree of excellence for our products we can increase our exports and thereby provide more work and money for our own people.

The purpose for which M. Jacques Schneider gave the Trophy in the first place, was to encourage research in, and the betterment of, high-speed aircraft. That purpose has been fulfilled in a manner which must be beyond M. Schneider's wildest dreams, for this, the eleventh contest, has raised the speed at which the course has been flown from 45.75 m.p.h. in 1913 to 340.08 m.p.h. in 1931. To him, therefore, we owe a debt of gratitude, inasmuch as he has given us the incentive through which our knowledge of aeronautical science has enabled us to claim the supremacy we now have. To Lady Houston we owe an

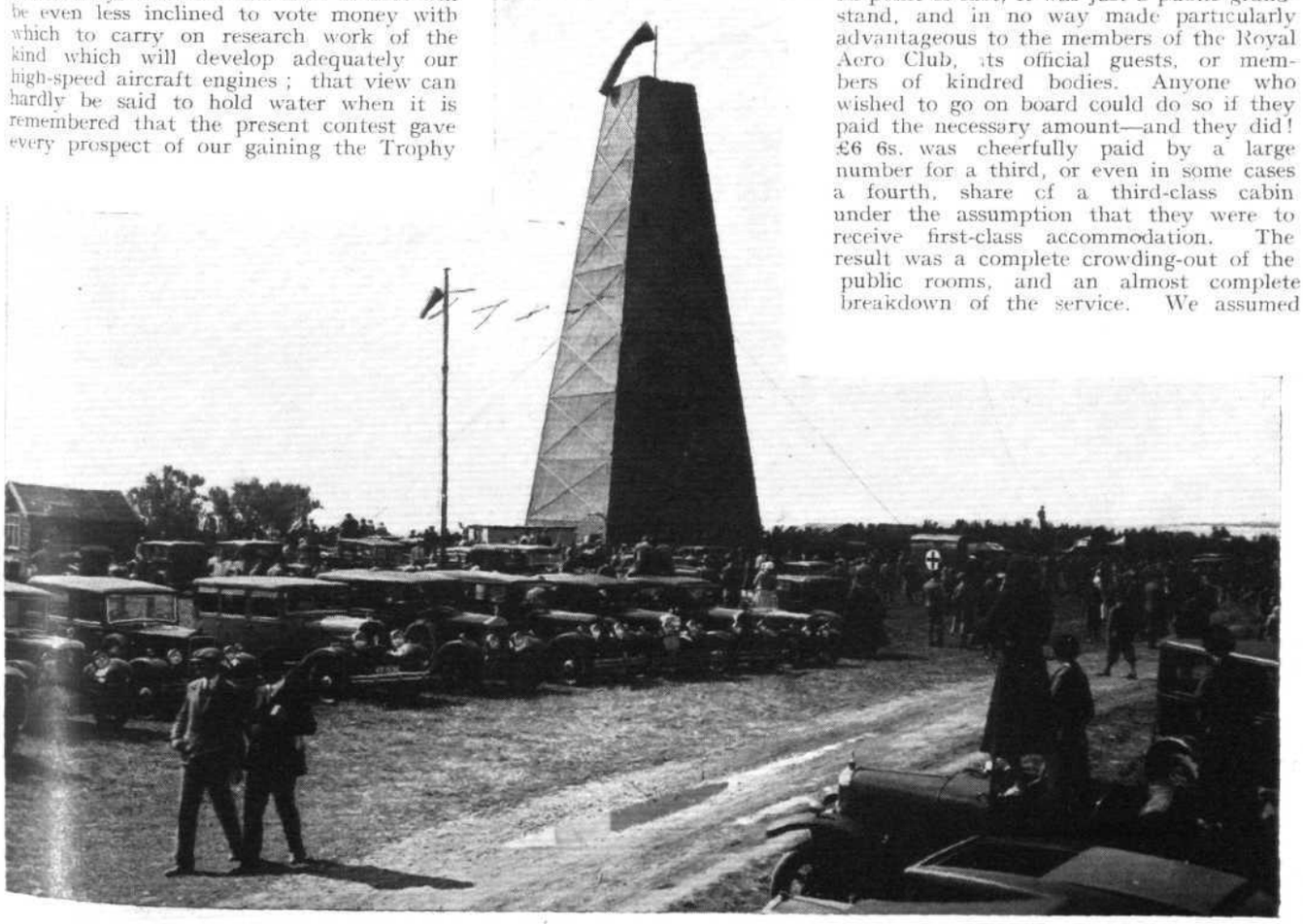




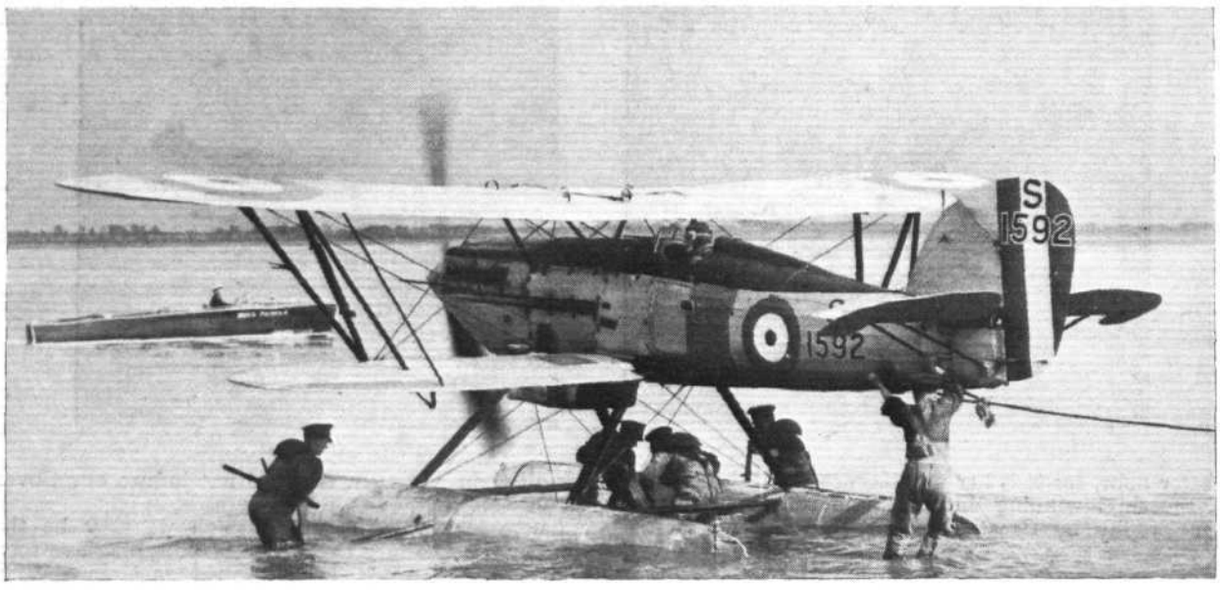
even greater debt, for it is her munificence which has made possible the final winning and ultimate retention of the Schneider Trophy by Great Britain. Had she not come forward with her magnificent offer, it is probable that we should not have been able to put a team of aircraft in the field, with the result that Italy would have most likely won the Trophy through our default, and thus kept the contest alive for a further indefinite period. Whether or not this would have been a desirable thing is a very debatable point, but the general consensus of opinion is undoubtedly that the cost of the preparations for proper participation in the Contest was becoming so large that even Governments thought more than the proverbial twice before committing themselves to the expense. It seems, therefore, that for everybody the best ends have been served by the present turn of Fate. As it is now, all designers will be free to devote themselves to the development of their own aircraft and engines along their own lines, without the hampering feeling that they must conform to a definite set of rules in order to gain a certain definite object. It may be said that, with the incentive of the Schneider Trophy taken away, Governments such as ours will be even less inclined to vote money with which to carry on research work of the kind which will develop adequately our high-speed aircraft engines; that view can hardly be said to hold water when it is remembered that the present contest gave every prospect of our gaining the Trophy for all time, yet even that did not induce our Government to take any real or monetary interest in it.

There is one point upon which we may be thankful, and that is the fact that those responsible have seen fit to continue the work accomplished last Sunday to the extent of installing a specially "hotted-up" engine for still another attempt to raise the world's speed record. Whether or not this attempt is being financed by Lady Houston (the first syllable of whose name, it should be remembered, is pronounced "house" and not "hoos"), we do not know, but that it is being done now, at the right time, is a matter upon which we may all congratulate those on whom the onus of forming this decision falls. Now is the right time to raise the record to such a height that it is not likely to be beaten for a considerable time, and so give us breathing time to consider what further developments to our equipment are possible.

One of the best points from which to view the contest was undoubtedly on board the *Homeric*, the White Star liner, which had been advertised as the official ship for those of the Royal Aero Club who were not actually doing a job of work at the time. In point of fact, it was just a public grandstand, and in no way made particularly advantageous to the members of the Royal Aero Club, its official guests, or members of kindred bodies. Anyone who wished to go on board could do so if they paid the necessary amount—and they did! £6 6s. was cheerfully paid by a large number for a third, or even in some cases a fourth, share of a third-class cabin under the assumption that they were to receive first-class accommodation. The result was a complete crowding-out of the public rooms, and an almost complete breakdown of the service. We assumed



AT WEST WITTERING: The car park around the pylon afforded an excellent view of the machine. Above, two views of Boothman banking around the West Wittering turning point. (FLIGHT *Photos.*)



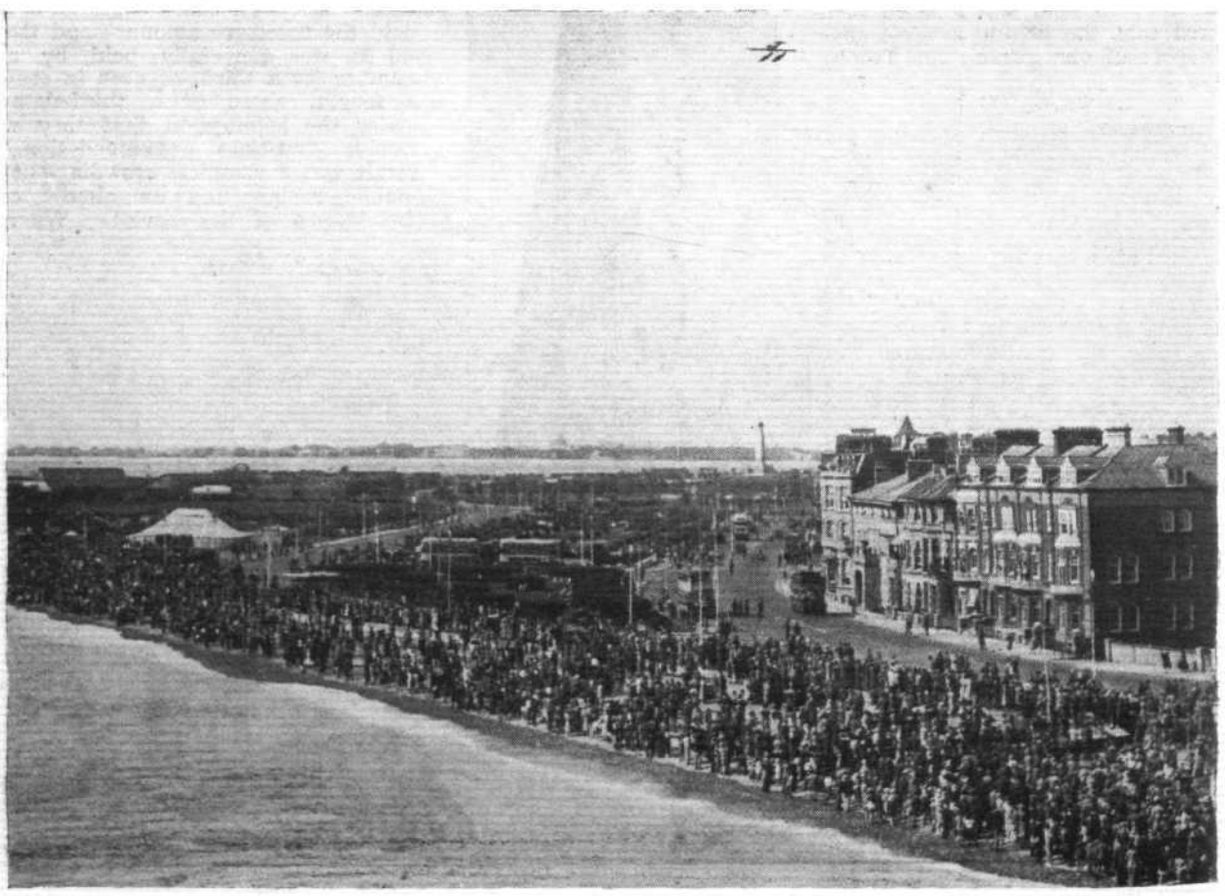
SCHNEIDER RECONNAISSANCE: A Fairey "Firefly" (Rolls-Royce "Kestrel") used for testing conditions. It also gave a demonstration of aerobatics on the day of the Contest. (FLIGHT *Photo.*)

that never in the history of this ancient ship had the stewards and others ever had to deal with a full complement of passengers.

However, as a grandstand she was good, and, apart from the fact that she was berthed very much farther away from the western turning point than we had been led to believe she would be, a good view of almost the whole course was obtained during the actual fly-over.

Saturday was, of course, a day of bitter disappointment. The early morning was quite good, and it would have been possible, we were told, to have flown off the race at about 8.0 a.m. It was not feasible to clear the course at that time of the morning, and no doubt the question of disappointing the crowd also carried some weight when it was decided to wait until later. Unfortunately, the weather steadily deteriorated, and by the time that the *Homeric* had reached her anchorage, which was somewhere about 10.30 a.m., it was obvious that there was little or no chance of the race being flown that day.

Those on board, therefore, relegated themselves to passing the time as best they might. Various attractions of the type always organised on board such vessels were provided, and every effort was made by all to pass the time congenially, each in his or her own particular fashion. Stories were passed round, and one of the best concerned the efforts of a well-known watchmaker to popularise his wares at Calshot. It appears that he sent three watches to the station for certain of the pilots, expressing the hope that they would accept them and find them entirely satisfactory. One of these was addressed to a pilot of the last Schneider Contest, while a pilot, whose name had already been used publicly in connection with the present con-



BOOTHMAN PASSING OVER THE SHORE AT SOUTHSEA: The beach was lined with spectators.

THE LAST SCHNEIDER EVENT: Bringing Boothman's S 6B in after the completion of the 217 miles' course at an average speed of 340·08 m.p.h. (FLIGHT *Photo.*)

test, did not receive one. This latter deprecated this action, and announced his intention of confiscating the watch sent for the pilot who was not a member of the team. He took it, examined it, and then opened the back. Therein he found an inscription, which made him close the offending timepiece hurriedly and hand it back with the announcement that evidently such a watch was not meant for him. . . . It read: "Warranted to work under water."!

On Saturday night a dinner was held on board, ostensibly to replace the Schneider Banquet which was to have been held after the race. This was really a complete fiasco, and degenerated into nothing more or less than a badly-organised informal dinner. The dining room was half empty, and no attempt was made to gather the guests together into the central part. Distinguished personages who should have been there were not, and, although several foreigners were asked as guests of the club, yet the Chairman did not even make a short speech of welcome to them; nor did he make some public acknowledgment of the gratitude which the Royal Aero Club and all its members felt toward Lady Houston for the magnificent part she has played in making this year's contest possible.

Sunday dawned bright and clear, and there was every prospect of being able to fly off the race. It had been announced that this would not be possible until some time after noon, owing to the difficulty of clearly the course adequately, and, as it turned out, this was what was done.

The scene was really a memorable one. The decks of the *Homeric* were crowded, and somehow the thrill of expectation permeated everyone. They realised that in all probability they were about to witness the last of an historic series of races for the Schneider Trophy, and that, coupled with the anticipation of prodigious speeds, gave the whole gathering a somewhat suppressed air of excitement. It was really one of the most glorious mornings we have had this year, and sitting on deck watching the speed boats dashing in all directions, urging many mishandled small-craft into their proper anchorages, was as pleasant a way of spending the time as one could wish. A little before 11.0 a.m. several of H.M. Sloops came down the Solent, and went out to various points in Spithead, flying the Red Flag, which denoted that the course was being closed to ordinary traffic. The Isle of Wight ferry steamers, which were crossing about this time, were held up and told to anchor, and thereby obtained an unpremeditated, but excellent, view of the subsequent proceedings, while all other unauthorised shipping was politely, but firmly, ushered out of the way to safe anchorages.

The weather could hardly have been better. The sky was not cloudless, but at the same time the predominant

INTERNATIONAL INTEREST IN SCHNEIDER CONTEST: Left to right—Captain von Hoeppner, President of the German Aero Club; Prince Bibesco, President of the F.A.I.; and Herr F. Siebel, of the Klemm company.

note was a preponderance of blue sky and bright sunshine. The visibility was excellent, and there was every prospect of conditions improving even further. One of the matters of most importance for flying such aircraft as the S.6B.'s is the state of the sea. This must be sufficiently ruffled to enable the pilot to see the surface easily, while at the same time it must not be too rough, as even a slight swell makes both the take-off and landing almost impossible. Equally, the surface of the sea must not be glassy or oily, for under these conditions it is almost impossible for the pilot to gauge his height for landing, and a crash is extremely probable.

Sunday was, however, admirable, though as the day drew on the fear grew that the sea would become too rough, for the wind was continually freshening. However, it remained sufficiently low to make the flight possible, and at 12.15 p.m. the B.B.C. broadcast began from the end of Ryde pier. It was announced that further information would be given at intervals of 15 min.

Actually, the announcer, Sqd. Ldr. Helmore, was caught napping, for he gave out that at 1.15 p.m. he would again switch over, and that the starting gun might be expected to go off any minute after that. In point of fact, it went almost before he had finished speaking, and very few people around the course could have realised that the race had started. The gun was fired from H.M.S. *Medea*, a sloop which was anchored right up on a line between Calshot Spit light vessel and West Cowes. Those in the *Homeric* were so far away that only possession of the most powerful glasses enabled one to see the take-off. As it was, we ourselves were lucky, and were actually looking at the *Medea* as the gun was fired, and were able to pick up Flt. Lt. Boothman before he was into his stride for the first take-off.

We had followed the progress of the three pontoons bearing the two S.6B.'s and the S.6A. when they came out and anchored earlier in the morning, and therefore knew exactly where to look for the first machine.

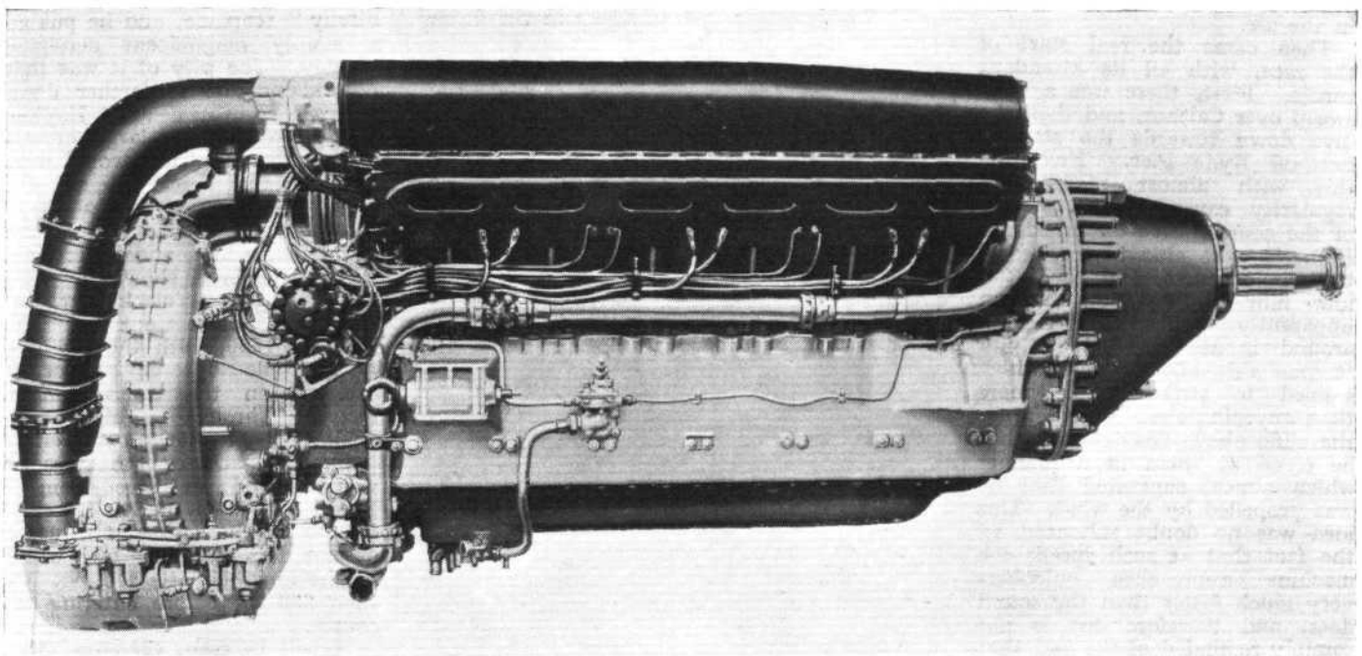
A great deal of disappointment was felt that Flt. Lt. Boothman would, with any luck, be the only pilot to fly round the course, but this was tempered with the realisation that we should most probably witness a record-breaking flight, which would startle the world with a speed far in advance of that obtained during the previous contest in 1929. We were not wrong, and long before Flt. Lt. Boothman really settled down it was realised that once again British aircraft and engines were going to show an advance on previous performance

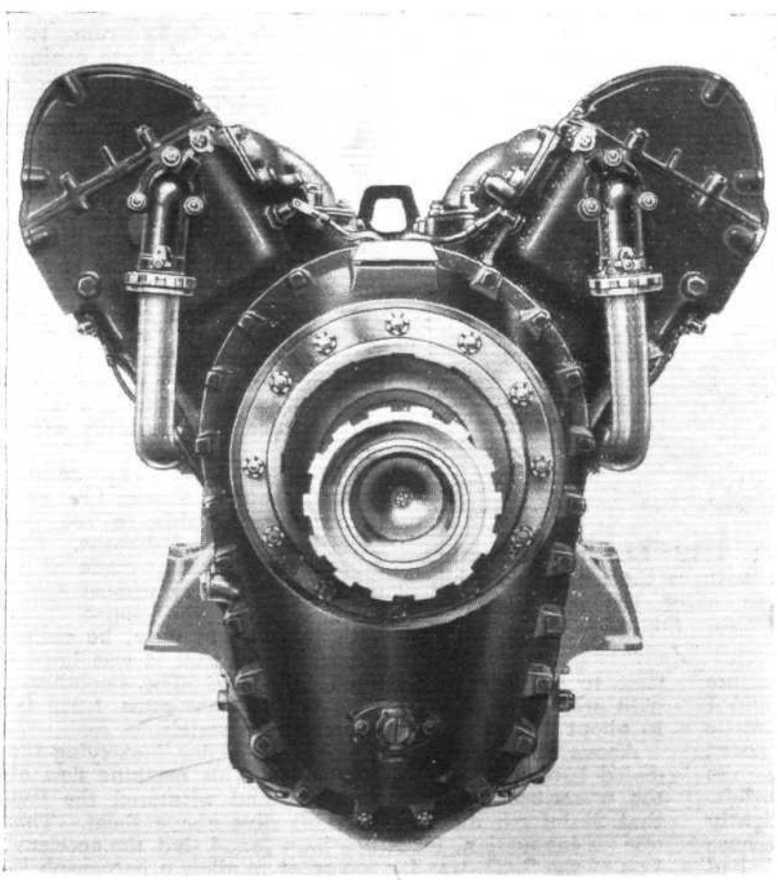
FRENCH REPRESENTATIVES WATCH SCHNEIDER: On board a patrol boat during Boothman's flight. From left to right: M. Robert of the Bernard firm, M. Vasselin (Dewoitine), M. Vanker (Lorraine), M. Mary (Nieuport-Astra), and M. Salusse (Lorraine). (FLIGHT *Photo.*)

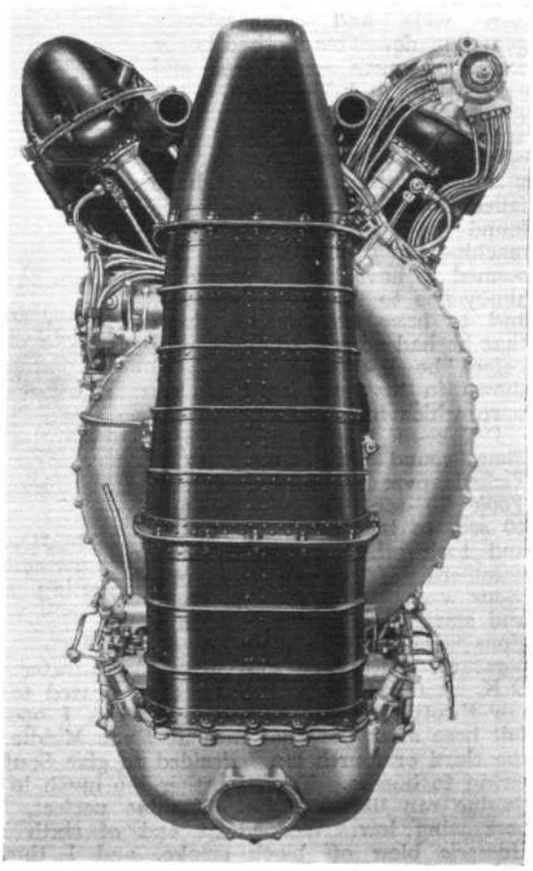
which left no doubt as to their world supremacy.

However, before starting the race, the preliminary trials had to be accomplished successfully, and, as this entailed a landing with almost full load, these trials were considered by many to be the most critical feature of this year's race.

Their fears were, however, unfounded, for Flt. Lt. Boothman took off without any suggestion of difficulty, and there was little or no evidence of porpoising, his time for the run being about 40 sec. He circled round, a mere speck in the distance, and, flying low down over the Island beyond Cowes, came in to land. Now was the really crucial moment, and one which all those who knew anything of the problems involved in these aircraft could not help awaiting with a certain amount of anxiety. Fears were, however, unfounded, and with a long flat glide, which must have been over two miles in length, Boothman brought the seaplane down to touch the water lightly and accurately, without a single bounce. It was a superb exhibition of skill and judgment, and one which we should all be proud to have witnessed. The taxying test which followed involved a further test of skill, for







A BRITISH TRIUMPH OF ENGINEERING: The Rolls-Royce "R" type racing engine fitted in the Schneider machines has been developed from the "H" type, but gives well over 2,000 h.p. for a weight of rather less than three-quarters of a pound per horsepower. The engine is geared and supercharged. In the upper photograph the supercharger can be seen on the left, while the two lower photographs show the engine from the front and from the rear.

under the rules it was necessary to taxy for two minutes and then take off again to fly the race. Half an hour was allowed between the first take-off and the start of the race, but, although that seems a long time, it would not have been so had the pilot stopped the engine while carrying out the taxying test. Boothman did not do so, however, and with perfect judgment just kept sufficient steerage way on to allow him to circle round and get into the right position for the second take-off before the two minutes was up. The time taken in the take-off was allowed to count in the taxying time, so Boothman actually started his second take-off about 1 min. 35 sec. after landing, taking some 40 sec., again, before he was in the air.

Then came the real start of the race, with all its attendant thrills. First, there was a wide sweep over Calshot, and then the dive down towards the starting line off Ryde Pier. Following this with almost monotonous regularity came the seven laps of the course. We on board the *Homeric* were able to see nearly the whole course, and could follow him as he flew in an apparently effortless fashion around it at some 340 m.p.h. It was this effortlessness which seemed to strike people more than anything else. Watchers on the cliffs above Seaview say that he came at them in a manner which almost suggested that he was propelled by the wind. This idea was no doubt enhanced by the fact that at such speeds the machine approaches onlookers very much faster than the sound does, and therefore one is not forcibly reminded of the fact that it is propelled by an engine until it is almost past.

Throughout the race his turns were wide and comparatively gently made. This method is the result of much experiment and calculation, and has been found to lose least speed.

From our point of view, the race was eventless, though not thrill-less, for no one could have failed to feel a thrill when it was found that we were watching a machine lap at 340 m.p.h. We seemed to have been a source of annoyance to the pilot, however, and to have led him to think that he had completed the course before he had done so, as is shown in his own log book report, which follows:—

"Take-off from pontoon good. Flew round and landed O.K. Ticked over 1 min. 15 sec. Took 20 sec. to pull up and 40 sec. to take off. Opened up and took off. Got a bit of a hammering from my own previous wash. Turned on to Ryde and started the course. Instructions were to fly at a water temperature. After one and a-half laps water temperature O.K. at full throttle. Water then started to rise, and I ran throttled until seventh lap, when I opened throttle full bore after the final turn at Ryde Middle. On about the third or fourth lap I decided to give Southsea a miss owing to bumps. Turned rather too much in to the left. Engine ran like a clock. Machine perfect, but slightly port wing low. Worried at end of sixth lap because *Homeric* blew off black smoke, and I thought I had 'boobed' on lap-counting. Felt rather worried about petrol on last lap in case I was actually trying to do an eighth."

Incidents on board the *Homeric* during the actual race were few, and, apart from the fact that most people thought the race had started when the "Atlas" and later the "Firefly" flew round, about 12.45 p.m., to clear the course, there was little to report. At least, two men enjoyed it to the full, although somewhat selfishly, for their snores were a considerable distraction during the race!

HEADING FOR THE LINE: Stainforth's Supermarine Rolls-Royce S.6B snapped while getting ready to enter the speed course.
(FLIGHT *Photo.*)

The World's Speed Record

The news that Flt. Lt. Stainforth was to make an attempt on the world's speed record was passed round shortly after Boothman had landed. This could not take place for some time, as the officials had to be transported from Ryde to Lee-on-Solent and the timing apparatus prepared for the runs. During the wait F/O. Snaith was sent up in the Fairey "Firefly" seaplane, and he put up a simply magnificent aerobatic display. The pity of it was that he did not do it farther down towards Southsea and Hayling Island, where the large crowds were gathered. They would have then felt that a real attempt was being made to entertain them. However, those who had glasses could follow him, and it certainly was a wonderful show.

About four o'clock Flt. Lt. Stainforth came out on the S.6B., S.1596, with the ordinary racing Rolls-Royce engine, for his attempt on the three-kilometre record. Throughout, his was an exhibition of the most perfect judgment. Under the rules he was allowed to dive from a height of 400 m. (1,300 ft.), and had to fly the course at a height of not less than 50 m., which height must be attained not less than 500 m. before entering the course.

It will be seen, therefore, that such a series of flights calls for the most accurate judgment possible.

Stainforth made five runs, two with the wind and three against it. The course lay from Lee-on-Solent to Hill Head, on the eastern side of Southampton Water, so that his flights either end of the actual course carried him over Ryde on the one hand and Southampton on the other. In the *Homeric* we were lucky, for when on the southern end of the course Stainforth flew right over our heads on several occasions, and at least twice we were able to appreciate his speed when he came directly for us and grew from a mere pin-point to a howling dark-blue engine with wings on.

Our best view was as he entered the course from Lee, and then we were able to see the exactitude of his judgment. His dives were obviously made so as to obtain the very utmost speed when entering the course, and, with this end in view, he pulled out so slowly that it was impossible to say when he started to do so. The smoothness with which he decreased his height from some 1,200 ft. to about 150 ft. was phenomenal to watch.

Above him there was the official "Atlas," carrying the sealed barograph and an observer. This machine flew at the prescribed height of 400 m., and witnessed the fact that Stainforth did not start his dive above them. This was an innovation, for it has been found that the acceleration of the S.6B. was far too great to allow a barograph to function satisfactorily when carried in it.

On the second run, when with the wind, which was blowing somewhat across the course, he attained the impressive speed of 388.67 m.p.h. (625.49 km.p.h.).

The timing apparatus is of the photographic type, and now that these have been developed, it is possible to issue

fully authenticated figures, namely, 379.05 m.p.h. (610.01 km.p.h.).

The figure first published for Flt. Lt. Stainforth's record flight was 386.1 m.p.h. This has since been found to be an error. This first figure was found by stop-watch timing, and, when a machine is travelling in the region of 390 m.p.h., an error of even only 3/5ths of a second will make a difference of some 15 m.p.h., and the most expert timekeepers are seldom proof against an error of this size. The corrected figures were obtained by means of the photographic method, wherein two cinema cameras are used. These cameras not only record the passage of the aircraft at either end of the course by a continuous series of photographs, but also record the time at which each exposure is made in terms of vibrations of a tuning fork, which is in electrical connection with counters in both cameras. Even this method will shortly be inadequate, but for speeds up to about 400 m.p.h. there cannot be an error greater than one 20th of a second.

Following this attempt, it has been announced that a special engine will be put in the same aircraft and a further attempt made shortly. What extra power has been obtained from this engine has not yet been divulged, but that it is considerable may be taken for granted, and, given reasonable luck, there seems every probability of Stainforth's record being raised within a few days.

Stainforth's own log book report shows that his take-off was not too easy, owing to the swell which had by this time started, and, in fact, by the time he had finished his runs there was quite a chop on the water out towards Cowes. It may have been this which decided him to land after the fifth run, as he did, instead of waiting for the sixth, and also for the fact that he put the S.6B. down right up between where the *Medea* was anchored and the Calshot Spit light vessel:—

AT 400 M.P.H.: Stainforth approaching the 3 km. course during his flight on September 13, when he raised the straight-line record to 610.01 km./h. (379.05 m.p.h.). When the special engine has been installed in the machine another attempt will be made. FLIGHT *Photo.*)

Take-off, 39 sec. First take-off attempt porpoised badly owing to small swell. Second porpoise started. Not so bad as first. Throttled slightly, and porpoise damped out. Opened up aagin, and take-off then straightforward. After looking for possible obstacles on speed course, did five runs, starting from Spithead forts at one end and Hythe pier at the other. After last run cruised round two or three minutes and landed opposite *Medea* and lightship. Take-off seemed fast. Landing O.K. except for patter. ["Patter" means a slight rocking from side to side.]

Lady Houston, who contributed largely to the cost of the preparations for the Schneider flight, landed at Cowes on Sunday evening from her steam yacht *Liberty*, and at the Royal Yacht Squadron met Sqd. Ldr. Orlebar and the members of the High-Speed Flight. On Monday, September 14, she entertained them all to lunch on board the *Liberty*.

The following congratulatory messages have been received by the High-Speed Flight:—

"The Air Ministry announces that the King has caused to be conveyed to Sqd. Ldr. Orlebar, Flt. Lt. Boothman, Flt. Lt. Stainforth, and all officers and men of the High-Speed Flight his congratulations on their victory in the Schneider Trophy contest and achievement of a world's high-speed record."

The Prime Minister sent the following telegram to the High-Speed Flight before the race:—

"I have just heard that, in accordance with the conditions of the Schneider Trophy, the flight must take place at the first opportunity after yesterday. I send my very best wishes to the men who are to take part, and I am sure that the result of the flight will be to demon-

A GOOD JOB WELL DONE: **Flt. Lt. G. H. Stainforth returns to Calshot after establishing the new world's speed record. The photograph shows rather well the somewhat unusual shape of the Fairey metal airscrew. The pitch, it will be noticed, is quite perceptible.**

strate once again the magnificent courage and ability of our Air Force, for every member of which I have the warmest personal regard, and to put beyond question the superiority of British engineering skill."

General Balbo, the Italian Air Minister, sent the following message:—

"Please accept warm compliments on the brilliant performance of yesterday over the Solent."

Lord Amulree, the Air Minister, has replied:—

"Greatly appreciate your kind congratulations. We all deeply regret mishap that deprived us of the pleasure of welcoming the Italian team."

In the *Homeric* we all felt a sense of relief that both the Contest and the Speed Record flights were over, and that they had been so successfully accomplished, and on our way up Southampton Water, about 7.0 p.m., there was much jubilation.

One point which struck all those who came into contact with both Boothman and Stainforth after their respective flights was their apparent lack of distress or fatigue. They neither of them appear to have suffered from fumes at all, and both of them were a great contrast to the pilots who came back after the last race covered in oil and soot, and who complained that fumes had made things very difficult for them. It would seem that very great advance has been made in the aircraft from the point of view of ventilation and cleaning up the fuselage, so that the exhaust fumes are led away clean instead of being drawn into the cockpits.

Flight Lieutenant Stainforth's Speed over 3-km. Course

Run	km./h.	m.p.h.
1	601·64	373·85
2	625·49	388·67
3	595·23	369·87
4	617·67	383·81

Average of four runs: 610·01 km./h. (379·05 m.p.h.)

GOING AFTER THAT RECORD: The Supermarine Rolls-Royce S.6B, S.1596, being lowered down the slipway at Calshot for Stainforth's successful attempt to beat the speed record. (FLIGHT *Photo.*)

A FLYING VISIT TO ITALY

The Breda Works

By B. S. ALLEN

I HAVE just returned from a flying visit to the Breda Works at Milan, and my most outstanding impression is that Italy is going to play a very serious part in private flying in the very near future.

The keenness and enthusiasm of Italian industry as a whole is, of course, remarkable. They claim that there are no unemployed, and all industrial disputes are settled finally as a result of awards by the Labour Council. The spirit of Fascism dominates everything, and even the railway trains display the new national emblem.

In addition, Mussolini takes a personal interest in aviation, and is determined that Italy shall play a leading part in it. In this he is backed up by the enthusiasm of every Italian connected with aviation, and there is such an air of real efficiency behind the enthusiasm—so different from the ragtime organisation which one associated with pre-war Latin industry—that he seems assured of success in his aims.

The object of my visit to the Breda Works was to see the new Breda 33, which did so well in the Tour of Italy, as described recently in FLIGHT. Here, obviously, was an aircraft of promise, and I arranged, therefore, to fly out to Milan, inspect the machine, and try it on its home ground.

My machine was a sports "Avian," G-AAYU, and before leaving, Cirrus Hermes, Ltd., installed the latest Hermes, with machined cast-iron cylinders, and totally-enclosed valve gear, fitted with positive pressure lubrication.

On Monday morning, August 24, I left Croydon for Milan. After a fair trip as far as Beauvais, the weather became steadily thicker, and by the time Le Bourget was reached the clouds were "on the deck," and it was pouring with rain. Upon inquiry at the "Met" Office, the weather to the south down to Dijon seemed far from desirable, and so it was decided to put up at Paris for the night. The following day rain still continued, and we were not able to make a start from Le Bourget until 4.30 p.m.; we then made the trip in very thick weather to Dijon, where we landed at ten minutes to six, with the clouds down on the hills and heavy rain. We put up at the Hotel De Cloche, and I can recommend this hotel to anybody who should be flying down this way.

The following morning I made a start at 9.30 a.m., with a perfect blue sky and visibility of about 30 miles. After a short stop at Montellimar for petrol, where incidentally the Mistral was blowing at about 30 m.p.h. over the ground, we proceeded to Cannes via Marseilles. As the Mistral was in our favour, the ground speed to Marseilles worked out at between 140-150 m.p.h.! We turned off at Marseilles for Cannes, where we landed for petrol, and then proceeded in most perfect weather along the coast of the Gulf of Genoa, to Genoa, and then through to Milan. This trip remains in my memory, because of the most perfect scenery I have ever seen while flying. The visibility was so good that at 2,000 feet one could see Milan 60 miles away.

The Breda Aerodrome at Milan turned out to be one of the largest aerodromes I have ever seen, with a perfect surface, and a run in the longest direction of 5 kilometres. Here the first example of Italian efficiency was encountered. Without a word on our part, our machine was wheeled up to the hangar, and a mechanic came up with petrol and a rag. In 20 minutes it was spotless. Thereafter the machine was treated like an honoured guest, and the locker was even wired up to prevent people strolling through from abstracting anything.

Next day, I tried the Breda 33, first in the rear seat with one of their pilots, and then solo. The take-off was good, the performance in the air nice, and the controls very light. The visibility was remarkable. I could not discover any vice, and I was particularly struck by the shock-absorbing qualities of the undercarriage, which must be very difficult to break.

The brakes are operated by independent levers and are very efficient.

I also flew the new Breda 15s., which is similar to the Breda which was in this country last year, except that they now have an inverted engine and Dunlop wheels and brakes, and a much improved view.

After this I toured the Breda Company's works. The atmosphere of efficiency was most marked, and it was noticeable that the operators took not the slightest notice of visitors. Everything was clean and orderly, and the factory seemed very busy turning out a number of machines for the Regia Aeronautica. Among the new craft was an extremely interesting monoplane, engined with three Pratt & Whitney "Wasps." The wing incorporates the monospar construction, and the machine is entirely built of duralumin, the skin being "creased" rather than corrugated in a way which is claimed to give the strength of corrugation with less extra weight.

The next day Lady Drummond Hay visited Milan, and I had the pleasure of taking her up in the Breda 33. Unfortunately, I had to leave on the Saturday, and, therefore, missed the bombing of Milan in the course of the Air Manœuvres. Milan was placarded with advance notices of the bombing, and warnings that some of the bombs might be defective and explode after reaching the ground, in which

Sig. Meleri (pilot) and Sig. L. Monaco (a Director of the Breda Co.), who flew from Milan to Croydon in 5½ hours in the Breda 33. (FLIGHT *Photo.*)

A side view of the Breda 33 (" Gipsy III ") monoplane. (FLIGHT *Photo.*)

case they would give off unpleasant fumes. I heard later that 700 machines took part in the bombing, and the next day propaganda was issued to the effect that Milan had been wiped out, with the obvious moral that Italy must have a good Air Force!

The Breda 33 certainly seems to have deserved its victory in the Tour, for it opens up new possibilities for aerial touring. With a machine that will carry two up, baggage and fuel for 750 miles, flying at a cruising speed of over 120 m.p.h. and a top speed of 145 m.p.h. with a 120-h.p. engine, you have an aircraft that can go anywhere. In addition, Italian finish and factors of safety on the aircraft, united with a British engine, should make for complete reliability.

On Monday, September 14, the Breda 13 was shown by Henlys, Ltd., at Heston Airport, before a large gathering of Press representatives. This particular model is said to have a cruising speed of 125 m.p.h., with a range of some 750 miles on normal tankage, though, if desired, extra tanks can be supplied which will increase the range to 1,150 miles. A range such as this, at this cruising speed, enables long international journeys to be made, and to demonstrate this, this actual machine was recently flown from Milan to Croydon non-stop in 5 hr. 5 min., a distance of 700 miles, the petrol consumption on this occasion working out at 22 miles per gallon.

With Dunlop balloon tyres and Bendix brakes, the Breda 33 may be manœuvred on the ground extremely easily, making the assistance of a ground staff unnecessary. All parts of the engine installation, such as the fuel filters, carburetter, and magneto, have been made easily accessible, and the covering of the rear part of the fuselage may be quickly removed, making inspection of the control units simple.

The engine used may be either the Gipsy III or the Hermes IIb, while Smith's instruments are fitted as standard.

Readers of FLIGHT will remember that full structural details of this machine were given in our issue of August 14.

The price with standard equipment, which includes A.S.I. altimeter, oil-pressure gauge, oil thermo-meter, fire extinguisher, compass, clinometer, fuel gauge, watch, engine and aircraft tool kits and covers, is £1,090.

THE FAIREY CO.'S DOUBLE LOSS

THE FAIREY AVIATION CO., of Hayes, has suffered a serious loss in the death, as the result of an aeroplane accident, of two members of the firm—Capt. C. R. McMullin and Mr. Kenneth Wright. Capt. McMullin and Mr. Wright were flying in the latter's " Bluebird " from Gosselies to Brussels on September 8 and had landed *en route* at Nivelles to inspect some " Fairey " aircraft recently delivered to Belgium. When leaving Nivelles the machine crashed, and both occupants were killed outright. The cause of the accident is stated to be due to the airscrew breaking.

Capt. McMullin joined the Royal Flying Corps from the infantry in 1917 and learned to fly at the Central Flying School at Upavon. He served in France with No. 22 Squadron and at the No. 1 Aeroplane Supply Depôt. On demobilisation in 1919 he joined Mr. Holt Thomas in Aircraft Transport and Travel, Ltd., and was the first pilot to fly a passenger aeroplane on the regular air line from Paris to London (Hounslow) in August, 1919.

In 1921 Capt. McMullin was selected by the Air Ministry to proceed to China to instruct Chinese Government students in aviation. He remained there for about one year, and in addition to instruction work inaugurated a passenger service between Peking and Pei-tai-ho.

From 1923 to 1926 he was acting as pilot with the Sky-writing Company, and flew on their behalf in Great Britain, America, Germany, Norway, Sweden and Denmark.

In 1927 he joined the Fairey Aviation Co., Ltd., as test pilot, and in 1931 became chief test pilot of that firm. He was 37 years of age.

Mr. Kenneth Wright was a brother of Sqd. Ldr. M. E. A. Wright, and had only just recently joined the Fairey Aviation Co. as inspector. Previously he was at Farnborough, and lived at Kensington.

Capt. C. R. McMullin

THE REID-SIGRIST TURN INDICATOR

FEW problems are more pressing in modern times than that of flying by instruments, or, as it is sometimes termed, "blind flying." It is inevitable that at some time or another a pilot, be he flying a R.A.F. service machine or a passenger-carrying civil aircraft, will run into unexpected cloud or fog. Under such conditions even the most experienced pilot will be hard put to it to keep his machine flying steadily on the desired course. Deprived of a horizon, or any datum line or point by which to judge the attitude of his machine, the pilot may succeed, by a highly-developed sense of balance and careful watching of his compass and airspeed indicator, etc., in keeping his machine straight, but the strain of so doing is very great indeed, and, if conditions get really bad, and continue for a long period, it is almost inevitable that the machine will ultimately get into undesired, and probably unsuspected, attitudes.

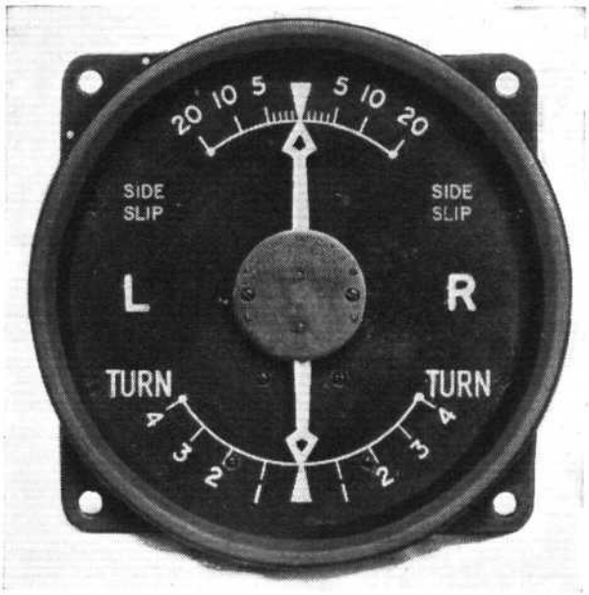
Realising the importance of developing the art of flying by instruments, the Chief of the Air Staff, Air Chief Marshal Sir John Salmond, ably assisted by past and present Air Members for Supply and Research, and Directors of Training, has pursued a vigorous policy of encouragement of instrument flying, and the result has been that Great Britain now stands high among the nations of the world in this, as in so many other branches of aviation development.

At the Central Flying School at Wittering, instrument flying has been brought to a high state of perfection, and some weeks ago FLIGHT published an exclusive photograph of Flying Officer W. E. P. Johnson taking off on an Avro 504 with the hood pulled over the cockpit.

Air Service Training, Ltd., at the newly-established school at Hamble, Southampton, make a feature of instruction in flying by instruments, so that during the next year or two this art should become part of the general equipment of almost every pilot who lays claim to being fully qualified.

Both at Wittering and at Hamble, use is made of the latest type of Reid-Sigrist turn indicator, produced by Reid & Sigrist, Ltd., Canbury Park Road, Kingston-on-Thames. This instrument, developed after years of research work, has now been in use, in 25 test examples, over a period of 2½ years in various types of aircraft, and can thus be assumed to have left the experimental stage well behind and to be in all respects a well-tested and reliable piece of equipment.

This happy state has not been reached without hard work. Squadron Leader G. H. Reid has been experimenting for many years on instruments of this general class, and the present-day Reid-Sigrist turn indicator is the outcome of innumerable tests, alterations, modifications, and more tests and more modifications. Nothing fundamental has been changed, but the details have been improved, redesigned, and re-tested, until now the company can give a very full guarantee not only of reliability and faultless functioning, but also of long life under hard service conditions.

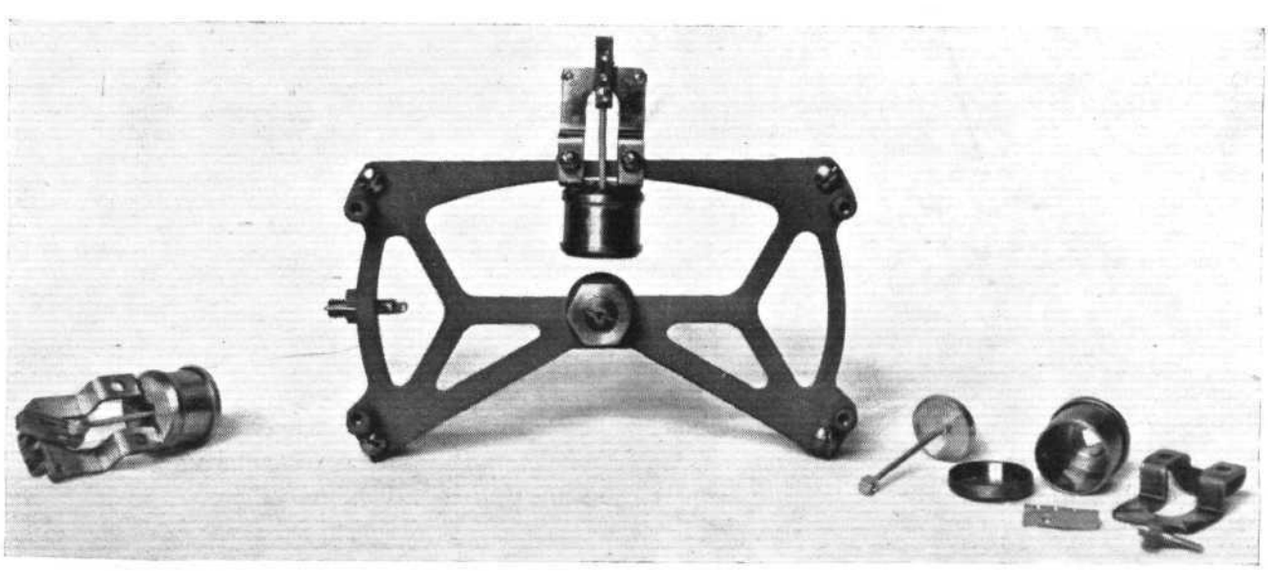


THE REID-SIGRIST TURN INDICATOR: The dial and figures are large in order to enable the pilot to watch the needles without fatigue. (FLIGHT *Photo.*)

The Reid-Sigrist turn indicator comprises two instruments in one: The actual turn indicator and another instrument which the makers term a sideslip indicator. The whole instrument is made up of three standardised and interchangeable units, readily dismantled for inspection, cleaning, etc.

The dial of the instrument is so arranged that the needle of the sideslip indicator is at the top and the turn indicator needle at the bottom. It is claimed that this is a natural arrangement, since a pilot instinctively thinks of his lateral control in terms of the position of his hand on the control column, and of the rudder control, according to the position of the foot-operated rudder bar, the latter placed low in the bottom of the cockpit and the former high, at about waist level.

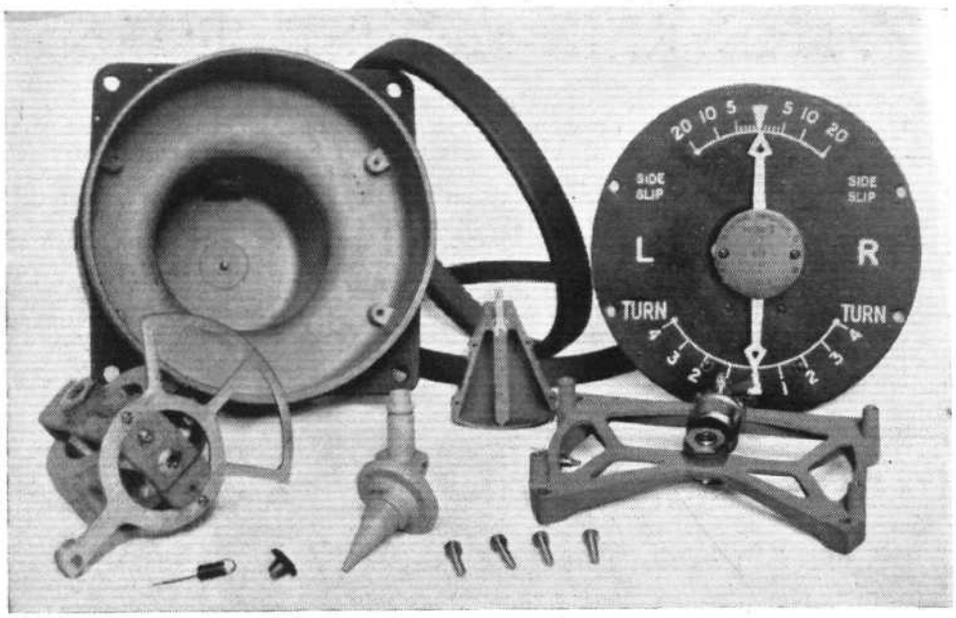
The dial of the instrument is large, with large and clear figures on both scales, so that reading the instrument imposes a minimum of strain and fatigue. At the same time, the part of the instrument which projects behind the instrument board is small, so economising space where



THE REID-SIGRIST TURN INDICATOR: The highly-geared damping cylinder of the turn indicator is seen in the centre mounted on its spider. On the left is the air pump unit complete, and on the right it is seen dismantled. (FLIGHT *Photo.*)

space is often none too plentiful. The sideslip indicator consists of an air-damped pendulum, the pendulum weight itself being flat and of considerable area, and working inside a fan-shaped casing, so that in swinging from side to side it has to displace the air in the casing from one side of the pendulum weight to the other, past the edges of the pendulum. The actual shape is shown in one of the photographs.

A portion of the pendulum extends upward above the pivot point, and a small pin on it works in the lower forked end of the sideslip indicator needle, which is, of course, pivoted at a point slightly above this fork. It will be obvious that, with this arrangement, any desired form of gearing between pendulum and needle can be obtained. Moreover, by suitable shaping of the forked end of the needle, a cam action can be realised which, according to the shaping of the cams (or in other words the inner faces of the fork members), will give a gearing which varies with the angular displacement of pendulum and needle. In the actual instrument this has been so chosen that for a very small initial displacement from zero pendulum position, the needle moves a good deal. Thus, great sensitivity is achieved at the moment when a lateral angular movement of the machine is just beginning. This is merely another way of stating that a bank is indicated at the very moment it begins, and before it has actually reached important proportions.



UNITS OF THE TURN INDICATOR: On the left the gyroscope with its quadrant. Behind it the outer casing. In the middle the air damped pendulum of the sideslip indicator. On the right the dial and the air-pump spider. In the centre foreground the air jet nozzle of the drive. (FLIGHT *Photo.*)

One result of this great initial sensitivity of the sideslip indicator is that pilots often complain that the needle shows left wing or right wing down, when in fact the machine is flying perfectly level. The truth is, of course, that many a pilot flies habitually with one or other wing low without being aware of the fact.

The actual turn indicator is of the gyroscopic type, and consists of a gyro wheel having small cups formed in its circumference, into which air is forced by the speed of the machine. So small is the bearing friction that the propeller slipstream, or even the speed of the exhaust gases, is sufficient to keep the gyroscope turning.

The gyroscope is mounted in gimbals, and centring is done by a small spring for which very fine adjustment is provided. This adjustment regulates the sensitivity of the turn indicator, and the makers of the Reid-Sigrist instrument hold the view that the sensitivity is best left to the manufacturer and not entrusted to individual pilots, none of whom ever agree on the amount of sensitivity which is desirable.

In order to keep friction down to a minimum, prolonged research on bearings has been carried out, and, after much experimentation, a type of ball bearing has been evolved which functions entirely satisfactorily. The spindle, or male part, is machined to a radius at the end, and the female part is cup-shaped. Very fine adjustment is provided, which enables the distance between male and female portions to be adjusted very accurately. Some idea of the small frictional losses may be gained from the fact that the gyroscope will continue to run for more than 20 minutes after the air drive has been removed.

All pinions, pins, etc., are agate-polished rustless steel, so that no corrosion takes place, and the instruments can be used with confidence even on seaplanes and flying boats.

The problem of effective and yet frictionless damping is always a difficult one. The manner in which the problem has been attacked in the Reid-Sigrist turn indicator is highly ingenious, and was not evolved until a number of types of air-damping devices had been tried. Fixed to the frame of the gyroscope is a quadrant of phosphor bronze. On the edge of the quadrant are formed a large number of fine teeth. Engaging with these teeth is a very small toothed wheel, which is mounted on one end of a tiny crank. On the crank pin a small piston rod has its bearing, the other end of the rod carrying a small piston. The rod is solid, so that, as the crank travels around, a certain angular oscillating movement is transferred to the piston. As, however, the piston is a very loose fit in its cylinder, this does not matter. Due to the very high gear ratio between quadrant and crank, the piston makes a great number of strokes for quite a small angular movement of the gyroscope and its quadrant, and the higher the rate of turn is the greater the speed of the piston. Thus, at a very gentle rate of turn the air can easily leak past the piston, and yet there is practically no mechanical friction, and damping is rapid and without giving rise to lag, while at the same time the action is practically dead beat.

The very greatest care is taken in the manufacture of the instrument, and during subsequent assembly, and before leaving the works, each instrument is thoroughly tested. Yet, in spite of this extreme care in manufacture, and in spite of the use of materials of the very highest quality throughout, the Reid-Sigrist turn indicator is now being marketed at the relatively low price of £25, which must be regarded as very low for what is a precision instrument.

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The Royal Aeronautical Society, Bristol Branch

THE following is the programme of lectures, etc., of the Bristol Branch of the Royal Aeronautical Society :—

FIRST HALF SESSION

1931

Tuesday, September 15 .. Lecture: "The Strength of Thin-Walled Tubes," by Dr. Andrew Robertson, D.Sc., A.M.I.Mech.E. (Lantern illustrations.)

Tuesday, October 20 .. .. Lecture: "Soaring Flight: Its Function in Aviation," by E. C. Gordon England, A.F.R.Ae.S. (Lantern and Cinema illustrations.)

Tuesday, November 3 .. Cinema.

Tuesday, November 17 .. Lecture: "High-Speed Aircraft," by Major Buchanan, O.B.E., F.R.Ae.S., A.M.I. Mech.E. (Lantern illustrations.)

Friday, December 4 .. .. Lecture: "Aeronautical Research Development," by E. F. Relf, F.R.Ae.S. (Lantern illustrations.)

Tuesday, December 15 .. Debate.

SECOND HALF SESSION

1932

Tuesday, January 5 .. .. Cinema.

Tuesday, January 19 .. .. Lecture: Some Viewpoints in the Design of Modern Commercial Aircraft," by F. Handley Page, O.B.E., F.R.Ae.S. (Lantern illustrations.)

Tuesday, February 2 .. .. Debate.

Tuesday, February 16 .. Lecture: To be arranged.

Tuesday, March 1 .. .. Cinema.

Friday, March 11 .. .. Lecture: "Aircrews," by Dr. H. C. Watts, M.B.E., D.Sc., F.A.Ae.S., A.M.I.C.E.

Tuesday, March 22 .. .. Annual General Meeting.

PRIVATE FLYING AND CLUB NEWS

THE DEAUVILLE-CANNES AIR RALLY.—The Deauville-Cannes Air Rally organised by the Aero Club de France, which took place between September 5 and 8, commenced with an arrival competition at the Deauville aerodrome, open to members of the Roland-Garros Aero Club and members of international light aeroplane clubs entered for the Rally.

Hanworth Club was represented by Major Sydney Cotton, who flew a "Gipsy Moth," with Mrs. Cotton as passenger, Lt. Cathcart-Jones in a "Puss Moth," with Mrs. Cathcart-Jones as passenger, and Mr. Lionel Balfour in a "Gipsy Moth," with Mr. Watt as passenger. Bad weather prevented other competitors from arriving at the scheduled time of 14.00 hr. on September 5 at the Deauville aerodrome in order to qualify for the competition, but later in the evening M. Massol and M. Defres, in a "Morane Moth," and M. and Mme. Japy, in a "Morane Moth," both of the Roland-Garros Club, arrived from Paris after encountering extremely bad weather.

Those competitors who arrived on the afternoon of September 5 were accorded a civic reception by the Municipality of Deauville, and later in the evening were given a gala dinner at the Restaurant des Ambassadeurs in the Deauville Casino.

The next morning, Sunday, September 6, the remainder of the competitors arrived at Deauville during the course of the morning. These included:—

Mr. Law and Lt. Webb in a "Westland Widgeon."

Mr. Blos Goldman with Dame Locke-King in a "Gipsy Moth" from Heston.

Jacques Maus and M. de Goliart in a "Saint Hubert" from the Brussels Light Aeroplane Club.

M. Arrachart, with M. and Mme. Jaffeux and Mlle. Jaisser and a mechanic, in a "Farman," from the Roland-Garros Club.

M. and Mme. Berthelot in a "Farman" from the Roland-Garros Club.

M. Hubert de Rouvre and M. Baudrier in a "Morane Moth" from the Roland-Garros Club.

The morning of September 6 was spent in the headquarters of the Deauville Air Club, and a reunion at the Bar du Soleil at noon. Lunch was given by the management of the Royal Hotel, as also a gala dinner the same evening prior to the continuation of the Rally to Cannes the following morning. Free accommodation was provided for all competitors at the Royal Hotel, Deauville.

At 07.00 hr. on Monday, September 7, the competitors left Deauville for Cannes, via Lyon. Maj. and Mrs. Cotton left the Rally from Deauville and proceeded to Paris on business, and Mr. Law and Lt. Webb returned to England, having had bad luck at Boule in the Deauville Casino. All the other competitors continued to Cannes, where they arrived in the following order:—

Mr. Balfour and Mr. Watt—"Gipsy Moth"—Hanworth.
Lt. and Mrs. Cathcart-Jones—"Puss Moth"—Hanworth.
M. and Mme. Japy—"Morane Moth"—Roland-Garros.
Mr. Blos Goldman—"Gipsy Moth"—Heston.
M. Massol and M. Defres—"Morane Moth"—Roland-Garros.
Jacques Maus—"Saint Hubert"—Brussels Aero Club.
M. Arracart—"Farman"—Roland-Garros.
M. and Mme. Berthelot—"Farman"—Roland-Garros.
M. Hubert de Rouvre—"Morane Moth"—Roland-Garros.

Lt. Cathcart-Jones had a forced landing when flying over the Alps, but was lucky enough to find a suitable field in the valley between the Devoluy mountains at the village of Monestir de Clermont. The petrol feed pipe and filter were found to be blocked with sand, but after thorough cleaning of pipes and jets a take-off was made down the slope of the mountain and the flight continued to Cannes. The height of mountains here was 7,000 ft., and the field was 2,700 ft. up.

At Cannes Aerodrome the competitors were welcomed by the Deputy-Mayor and the representatives of the Royal Aero Club de France, and Comdt. Bret.

Competitors were generously afforded free accommodation at the Carlton Hotel, Cannes, and were entertained to dinner that evening by the management of the Café de Paris, Cannes.

Tuesday, September 8.—A lunch was given to all competitors by the management of the Palm Beach Casino, Cannes. A diving competition by the Hungarian diving champion was postponed from the afternoon's entertainment, due to the bad weather.

On Tuesday evening a gala dinner was given at the Palm Beach Casino at Cannes by the Cannes Municipality and the Aero Club de France, at which dinner *every* competitor was handed a cheque for 1,000 fcs.

On Wednesday, September 9, the Rally broke up, and the competitors returned to their various destinations.

O. G.

A Comper "Swift" ("Pobjoy R") in full flight at Heston.
(FLIGHT *Photo.*)

CINQUE PORTS FLYING CLUB.—The weather for the week ending September 6 has excelled itself, and has given on successive days sunshine, rain, high wind, low cloud, and then, on Friday, snow. In spite of this, 25 hr. 10 min. flying were put in by Club members. Several new members joined the Club during the week, and Mr. Cargill is paying his annual visit from Scotland in order to put in the necessary hours' flying to renew his "A" licence.

On Friday Mr. H. R. Law left Lympne, in his "Widgeon," for Deauville, with Flt. Lt. Webb as a passenger, having entered for the Deauville-Cannes Rally.

On Sunday the monthly Ashwell-Cooke landing competition was held, and eventually resulted in a win for Mr. A. J. S. Morris from a field of nine. On the first attempt Mrs. Hammond-Davis and Mr. Morris tied with a score of 80 out of 100, but on the fly-off Mr. Morris was declared the winner by a small margin. Later in the evening Mr. G. E. L. Bates successfully carried out his first solo flight, and it is hoped he will obtain his "A" licence during the next week.

On account of the sunny weather enjoyed during the week ending September 13, 35 hr. 5 min. flying were put in on Club aircraft, and several new members joined the Club and began instruction for their "A" licences.

BROOKLANDS NOTES.—Great improvement in the weather during the last week has brought great improvement in the number of flying hours at Brooklands. The "Eighty" mark was again reached, and this included the launching of three first soloists, of which three were on the same day. The four fledglings were Messrs. Corbett, Holmes-á-Court, Moore and Mills. The last-named, who is only fifteen, went solo after six and a-half hours' instruction.

On Thursday, Mr. Beardmore paid a visit to the School, and gave a demonstration of towed gliding.

The School is now busy organising its winter programme. As soon as daylight saving comes to an end, courses of

lectures in meteorology, navigation, rigging of aircraft and other aviation subjects will begin. The lecture room has been fitted with a cinematograph screen, and already the School is exhibiting an interesting film illustrating the mistakes pupils tend to make in flying. These lectures will not be confined to pupils of the School, but everyone interested is encouraged to attend. The charges which it is proposed to make are extremely reasonable.

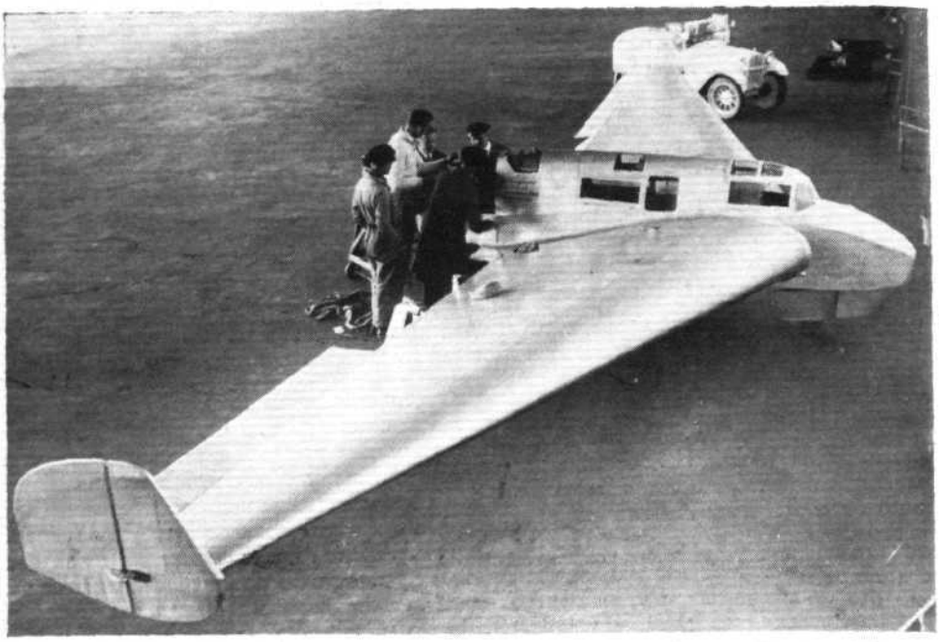
Three machines were collected this week for the repairs department, which continues to keep up a steady turn-out.

THE BRISTOL GARDEN PARTY.—Saturday, September 26. The programme of the Bristol and Wessex Aeroplane Club Garden Party is to include two competitions for the visiting pilots, both of which will be confined to pilots holding an "A" licence.

The exclusion of "B" licence holders from the competition is not an attempt to differentiate between the amateur and the professional pilot, but the organisers of the Bristol party appear to consider that if certain professors were admitted the result of the competition would be a foregone conclusion.

The first is an aerobatic competition, which will be judged by Flt.-Lt. C. F. Uwins, of the Bristol Aeroplane Co., Ltd., and F.O. W. N. C. Cope, one of the Club instructors.

In this event the pilots will be required to carry out their aerobatics at a minimum height of 1,500 feet. Failure to comply with this rule entailing disqualification.



A NEW TAILLESS AIRCRAFT: Herr Lippisch, chief designer of the Rhon-Rossitten Ges., has produced this new tailless aircraft at the Wasserkuppe. After considerable trials as a glider it was fitted with a Siemens engine and has now been taken by Herr Koehl, of trans-Atlantic fame, to Berlin. It is exceptionally clean and highly efficient as one would expect from the designer of the world's most successful gliders such as the Wien and the Fafnir.

The second event for visitors will be a landing competition.

Fl.-Lt. C. Clarkson has promised to bring down his Gipsy II "Moth," which is specially equipped for inverted flying.

Those arriving by air are asked to land by 2.30 p.m. and to report their arrival to the control tent, where they will be presented with tickets for tea, dinner and dance.

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Chinese Amphibians

Two amphibian aeroplanes, equipped with 165 h.p. Wright Whirlwind engines, have recently been completed at the aeroplane factory of the Chinese Naval Ministry at Shanghai. With the exception of the engines, the machines have been built entirely from materials produced in China.

British Air Attaché in Berlin

WING COM. J. H. HERRING, D.S.O., M.C., has been selected to be Air Attaché to H.M. Embassy at Berlin, in succession to Group Capt. E. L. Gossage, D.S.O., M.C.

Deputy Director of Technical Development

MAJ. J. S. BUCHANAN, who has been Superintendent of Technical Development at the Royal Aircraft Establishment at Farnborough, has been appointed Deputy Director of Technical Development at the Air Ministry, and will take up that office on November 1. His appointment marks a change in the constitution of this directorate, which will mean a more definite measure of continuity of policy in the department. In the past the Director and the Deputy-Director have been R.A.F. officers. When the late Air Vice-Marshal Holt, the former director, took over command of the fighting area his place in the Directorate of Technical Development was filled by Air Commodore H. M. Cave-Brown-Cave. Since the end of 1927 Group Capt. N. J. Gill has been Deputy Director, and in November will leave to take up other duties. Maj. Buchanan, as a civilian official of the Ministry, will be the first to occupy the position. Before his appointment at Farnborough he was Assistant Director of Research and Development Aircraft.

Reported Move by the Fiat Firm

A RUMOUR was reported by some correspondents in Italy that the Fiat firm offered to undertake the Schneider arrangements provided that the pilots Lt. Neri and Sgt. Maj. Agello were permitted to fly the machines. The Italian Air Ministry denied all knowledge of such an offer.

Royal Aero Club's New Club House

THE new club house at 119, Piccadilly, London, W.1, will be opened on Monday, September 21, and the club house at 3, Clifford Street will be closed after Sunday, September 20, 1931. In order to facilitate the removal to the new premises it will be necessary to close most of the rooms at 3, Clifford Street from Thursday, September 17, to Sunday, September 20, inclusive. On these dates the lounge, dining rooms, bedrooms and billiard room will not be available. The entrance hall and bar will be open. There will also be a buffet.

Gipsy Successes in Canada

THE "Tip-Top Aerial Derby," which is the longest air race in Canada, and was held on September 8 in connection with the Canadian International Exhibition in Toronto, was so successful that it is likely to be made an annual event. The course lay from Toronto through London and Chatham to Tilbury, back via Sarnia and Guelph to Toronto again, a distance of 449 miles. There were between 40 and 50 entries, of which 22 finished, nine of these being "Moth," three "Puss Moth" and three "Reid Ramblers" with Gipsy engines. The first was Mr. N. Muler, "Moth" (Gipsy I), at 104.25 m.p.h.; second, W. Miles, "Reid Rambler" (Gipsy I); third, N. Thomson, "Valkyr" (Wright); fourth, N. Irwin, "Moth" (Gipsy II). The fastest time was gained by Miss Winifred Spooner in a "Puss Moth" belonging to the Imperial Oil Co., at 129.6 m.p.h.

The Autogiro

EVIDENCE of the ease with which any ordinarily good pilot may take to the Autogiro, is given by the experience of the Autogiro Co. with Mr. Brie, who has now completed over 400 hr. in this machine since December, 1930. Previous to being engaged, Mr. Brie had had no experience on the Autogiro at all, but he found no difficulty whatsoever on this score. In the course of his demonstrations he has been all over England and also on two or three occasions to the Continent. On October 12 the Tatler Theatre, Charing Cross Road, will be showing an exceptionally interesting film of the Autogiro and the way it may be flown, and everyone who is interested in this type of machine should make a point of seeing it.

AIR TRANSPORT

SHORTER AIR ROUTES TO INDIA

Winter Air-Mail Services on Empire Routes

PROGRESS in the construction of the great maritime port at Haifa, on the coast of Palestine, will make it possible for Imperial Airways to introduce experimentally, next month, a faster and more direct winter air service between Britain and India.

At present the combined Indian and African air mails leave London each Saturday, and, after crossing Europe by way of France, Switzerland, and Italy, to the Mediterranean at Genoa, are carried on in big multi-engined flying boats via Naples, Corfu, Athens, and Crete to Egypt. Here the mail is divided, the Indian mail flying by way of Palestine to Baghdad, and the African mail travelling southward through the Sudan.

Beginning in the middle of October, arrangements have been made for two Empire air-mail services to leave London every week, one on Saturday as before and the other each Wednesday.

The Saturday service will still carry the Indian air mail, but after leaving Athens it will continue by flying-boat, via Cyprus, to the new port at Haifa (Palestine) instead of via Crete to Alexandria. At Haifa, triple-screw land-planes will continue the journey direct across Palestine and Iraq to Baghdad, thus making the Indian route shorter and more direct, the air mail arriving at Karachi (India) on the following Friday, less than six days after leaving London, this being the fastest winter schedule so far possible on the Indian route. The existing service between Palestine and Egypt will be retained, and will give through connections between Central Africa and India.

The new mid-week Empire service will carry the African air mail, and will travel via Brindisi and Athens to Alexandria, whence it will continue along the present route through the Sudan to Uganda, Kenya, and Tanganyika. This new arrangement will make the Indian and African air mails independent of each other, and will provide a bi-weekly air service across the Mediterranean.

The London-bound mail from India will continue to arrive at Croydon each Tuesday, but the date of arrival in London of mails from Central Africa will be altered from Tuesday to Friday in each week.

In addition to increasing air-travel facilities between Britain and the Near East, the new arrangements will also provide a direct air service between Britain and Palestine, while it will, in addition, be possible to fly from Kenya Colony to India, via Egypt, in only eight days.

The time-tables for both these Indian and African winter services have been drawn up to allow ample time for the recipients of letters to reply to them by the next return mail, several days elapsing between the arrival of an incoming mail and the departure of the next outgoing service, not only in Britain, but also at the terminals in India and Kenya Colony.

Another advantage offered by the new route will be a later departure from London. Instead of leaving Croydon at 8 a.m., as at present, the departure of both the Indian and African services will be scheduled for 12 noon, thus allowing travellers from provincial cities more time to travel to London to catch the Empire air services.

LUFTHANSA AUTUMN SERVICES

DEUTSCHE LUFT HANSA recently announced the following arrangements for their autumn services, which came into effect on September 1. The change in the flying schedule is necessary in order that the system of air lines may be accommodated to meet the changed traffic conditions after the heavy travel of the summer season, and, in the case of many lines, to adjust the flying hours to the shorter day. The routes flown over during the summer months to the bathing resorts on the North and German seas were therefore discontinued on September 1. All the important international routes, however, as well as those within Germany, will be further maintained on approximately the same scale as in summer. The Luft Hansa handles the traffic to 26 principal foreign cities, while 39 German cities have connections with the international European air traffic system. Along with their 41 routes for passenger travel, the Luft Hansa also maintains, over five special routes, a mail and freight express service to England, Holland, Scandinavia and the Balkan States, as experience has shown that freight shipments increase in the Fall months, particularly, to a considerable extent. During the month of September, the daily flight record of the Luft Hansa planes amounts to some 40,000 kilometres, *i.e.*, only about 18 per cent. less than during the principal summer months.

In the traffic to foreign countries, good, timesaving connections, sometimes even more than one daily, will be maintained, and also very advantageous travel opportunities within Germany will be offered.

Over the routes Berlin-Cologne-Paris as well as Berlin-Koenigsberg-Moscow (or Leningrad) the Sunday air services will be kept up until the end of September. During the coming months, the night illumination on the great international lines Berlin-London and Berlin-Paris will prove of particular value, as the arrangement for the schedule of these routes need no longer take into consideration the shortening of the daylight hours.

The tariffs, which were already considerably reduced in the summer as compared with last year, will continue in force, so that in many instances the journey by aeroplane is not appreciably dearer than a railway journey 2nd class.

It is a pleasure to note that the reduction in passenger fares, introduced at the beginning of the year, increased the number of passengers during the first seven months to about 8 per cent. over last year, in spite of the general economic crisis. On certain lines the fares will be again reduced, as from September 1 ; for example, Berlin-Vienna (express route) 82 mk. as against 105 mk. formerly; Berlin-Prague 42 mk. (55) ; Dresden-Berlin 22 mk. (30) ; Dresden-Vienna 60 mk. (75) ; Berlin-Hamburg 32 mk. (38) ; Stuttgart-Freiburg 20 mk. (22).

A Junkers for Canada

THE Junkers Co., of Dessau, have signed a contract with Canadian Airways, Ltd., under which the Junkers Ju 52 cargo monoplane will be used in the coming winter to deliver supplies to the Hudson Bay trading stations.

Peking—Berlin Airmen Released

THE two German pilots, Herr Ratlige and Herr Kölber, who were shot down by Mongolian soldiers while flying on the Peking—Manchurian section of the Eurasia Peking—Berlin air route last July, have at last been released, and are returning to Germany.

An Orkney—Inverness Air Service?

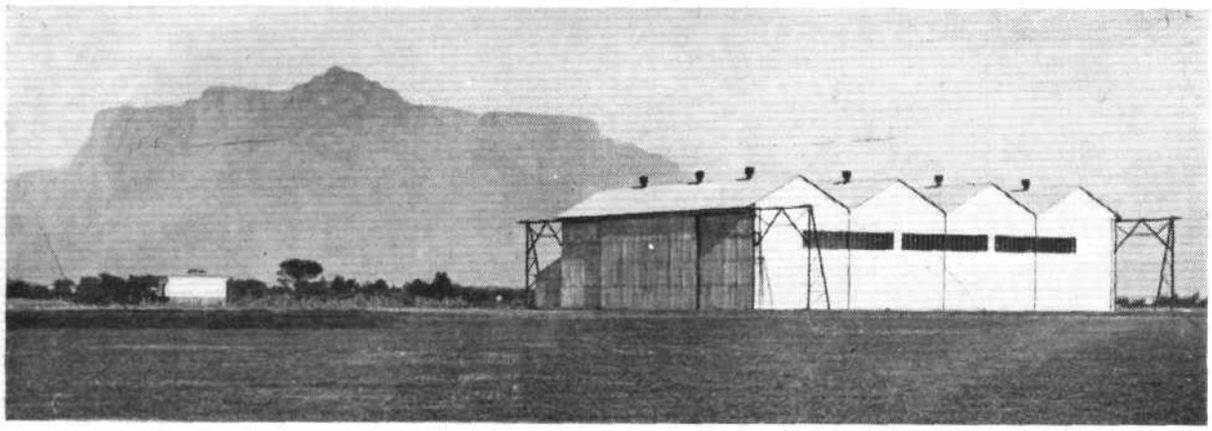
AN air service between Orkney and Inverness, with feeder lines between all the Orkney Isles, has been proposed for June, July, August and September of next year. A Cheshire aviation firm is prepared to provide such a service in view of the remarkable support accorded the experimental services in Orkney during the past three weeks.

France—New York in Under Four Days

THE mail aeroplane of the North German Lloyd steamship *Europa*, which was catapulted from her boat deck at 10 a.m. on September 8 while she was still 1,275 miles away from New York, alighted in the harbour there at 8.52 a.m. next day, and within the ensuing half an hour the mail which had left Cherbourg only three days and 21 hr. previously was being delivered in New York. The aeroplane made the journey, even with the inclusion of two stops for refuelling—one at Sydney, Cape Breton Island, and the other at Bridgeport, Connecticut—in 22 hr., beating the *Europa* by about 30 hr.

AIRPORT NEWS

CAPE TOWN'S NEW AIRPORT



The large all-metal hangar on the new airport at Cape Town. In the background will be seen Table Mountain.

THE new airport at Cape Town, which is to be the southern extremity of the projected England-Cape air route, is rapidly nearing completion. A suitable piece of ground was obtained, and the Cape Town municipality and the South African Government entered into an agreement to take the necessary steps to create an airport there. The ground is about one mile square, and six miles east of Cape Town.

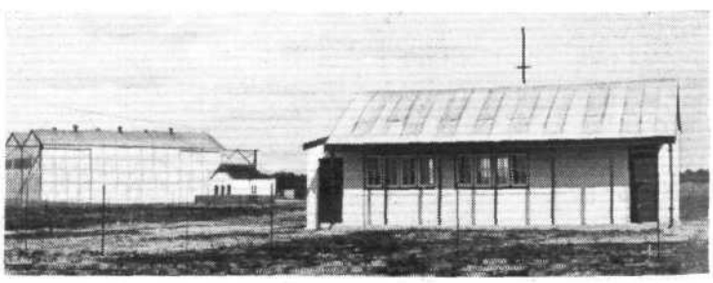
In October, 1930, the City Council agreed to expend £50,000 on the constructional work, and so the airport began to take shape. The South African Government has undertaken that all aircraft arriving at Cape Town will use the City airport, and that landing fees will not exceed those in force at Croydon ; and they will make arrangements for wireless and meteorological facilities. The late Sir David Graaff, the owner of much adjoining land, agreed to the erection of wireless masts and aerials on his ground, these being well away from the actual aerodrome.

On the west a large all-metal hangar has been erected, surrounded by concrete ; while near this are the passengers' waiting rooms and the meteorological station. The latter has double windows to ensure silence. With regard to the actual ground surface, two main runways have been completed to provide for landings and take-offs against either prevailing wind (N.W. and S.E.). A large number of men are employed, and the ground has been very carefully levelled. Special grass has been planted to bind the sand, so a good surface is assured when this has become established.

It is hoped that the Imperial Airways' service will start next January, with de Havilland 66 " Hercules " machines on this section.

In this way Cape Town is providing itself with an airport which bids well to prove worthy of the Mother City of the Union of South Africa.

G. M. S.,
Cape Town.



AT CAPE TOWN AIRPORT: On the left is a Fokker " Universal " (425 h.p. Pratt and Whitney " Wasp ") of Union Airways. The Company started operations on August 26, 1929, and since then have carried air mails with great reliability. In addition to this machine the company have five " Gipsy Moths." On the right is another view of the airport showing a small waiting room and the meteorological station.

CROYDON

SOME strange craft took possession of one of the hangars on the night of Monday last, in the form of old automobiles of the Veteran Car Club. All these cars were built before 1904, and caused much amusement. I cannot imagine such weird-looking vehicles even being considered the last word in design.

On Tuesday morning they all set out for Eastbourne at 09.00, and most of them reached there. I cannot imagine London full of them now. Mr. Lawford acted as a judge for the *Concours d'Elégance*—and a very good judge of a motor-car, too.

One hears a very amusing story concerning the nautical gent at Lympne, who is now looking for the local wit who organised a *concours d'élegance* of old cars to parade outside his cottage, or rather quarter-deck. His remarks are not printable. Naughty old Sailor-man!

Miss Amy Johnson and Mr. C. A. Humphreys arrived on Tuesday evening, after the completion of their flight to Tokio and back. Mrs. Johnson, when asked about Amy's rumoured attempt on the Atlantic crossing, stated that she was anxious to attempt it, providing she could get a suitable machine.

On Tuesday, also, we had a Rumanian visitor. The machine was of American origin, namely, an "Emscol," with a Wasp engine. The pilot was Commandant Jonescu. The machine was named "Regele Carol II," and in consequence the Press got hold of the story that King Carol himself was on board. King Carol must have rather unpleasant recollections of Croydon Aerodrome. I seem to recollect that he was detected here, and his secret flight foiled by one of the Control Tower officers. The machine flew direct from Bukarest to Croydon. The cabin has been converted into a series of petrol tanks, and all tanks are fitted with quick releases for emptying the petrol in a few seconds, in cases of emergency.

A fast trip was made from Milan on Thursday by an Italian Breda light aircraft. Fitted with an inverted Gipsy engine, the machine is a monoplane of the low-wing type, with two cockpits, which can be opened or closed. The journey was made in 5½ hr., and the pilot, Signor Meleri, was accompanied by a passenger. It is a pretty little machine, and has a remarkable turn of speed.

Prince George Bibesco arrived on Friday in a French service Potez machine, presumably to witness the Schneider contest. He was met by Col. Shelmerdine and an official of the Rumanian Legation.

On Friday night, Imperial Airways carried out two flights over London after dark with an "Argosy." This is getting quite a popular pastime with London folk, and there is no doubt a great fascination about a night flight.

A new air route beacon has been installed at Merstham, in the Redhill Valley. It has a candle-power of 70,000, and should, therefore, be seen from a great distance on a clear night.

Personal Flying Services continue their special charter department, and are doing good business. Maj. Clarke is extremely hard working, and this company deserve all the successes they are making. Mr. Styran (known as Mona to his friends) took the Sikorsky amphibian up to Scotland on Friday.

Several flying visitors arrived over the week-end to witness the Schneider Contest, but they were fewer than if it had been an international contest, instead of all-British. All people connected with aviation were delighted with the speeds attained, and hearty congratulations are due to the High-Speed Flight for their splendid work.

The traffic figures for the week were:—Passengers, 1,445; freight, 82 tons. P. B.

THE WILBUR WRIGHT MEMORIAL LECTURE

THE Nineteenth Wilbur Wright Memorial Lecture was read in the Aeronautical Section of the Science Museum, South Kensington, London, S.W., on September 16, before the Society by Mr. Glenn L. Martin, F.R.Ae.S., on the subject of "The Development of Aircraft Manufacture." The President, Mr. C. R. Fairey, M.B.E., F.R.Ae.S., occupying the chair.

Before the lecture the annual Council Dinner of the Society was held in the Science Museum, by kind permission of Col. Sir Henry Lyons.

Immediately before the reading of the Wilbur Wright Memorial Lecture, the following awards of the Society were presented by the President—

The Simms Gold Medal to Dr. A. H. Davis for his paper on "Noise." (The Simms Gold Medal is awarded for the best paper in any year before the Society on any science allied to aeronautics, for example, meteorology, wireless telegraphy, instruments, etc.)

The Taylor Gold Medal to Sqd. Ldr. W. R. D. Acland, D.F.C., A.F.C., for his paper on "Deck Flying." (The Taylor Gold Medal is awarded for the most valuable paper submitted or read during the previous session before the Society by a member or non-member.)

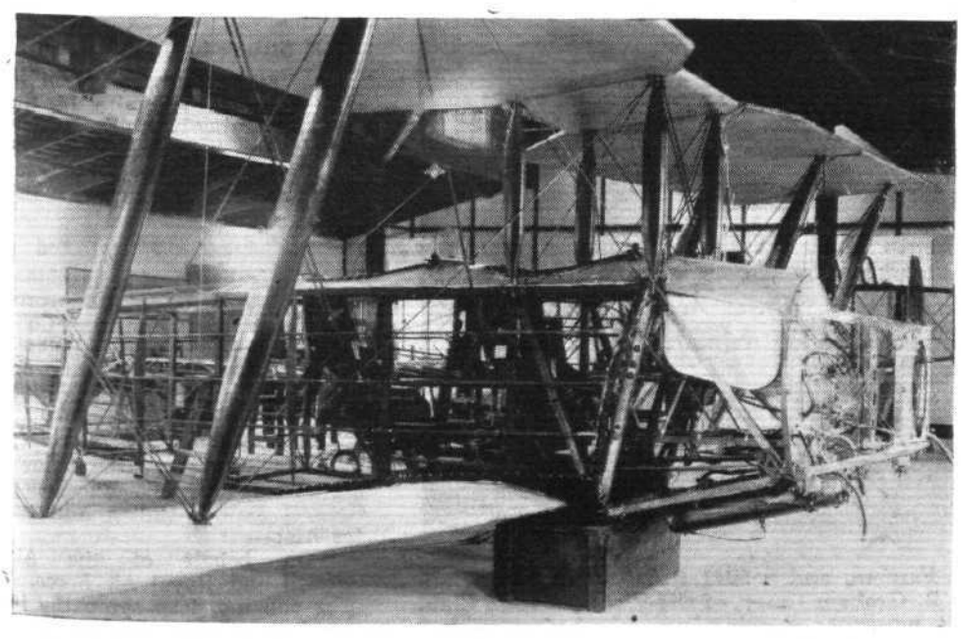
The Silver Medal to Mr. H. C. H. Townend, B.Sc. (Eng.), A.F.R.Ae.S., for his work on the Townend Ring. (The Silver Medal is awarded for some advance in aeronautical design.)

The R.38 Memorial Prize between Prof. R. V. Southwell, M.A., F.R.S., F.R.Ae.S., and Miss L. Chitty, A.F.R.Ae.S., for their paper on "Some Problems of Primary Stress Determination in Airship Hulls"; and Mr. W. G. Bird, M.A., A.F.R.Ae.S., for his paper on "The Influence of Atmospheric Humidity and other Factors upon the Static Lift of Airships." (The R.38 Memorial Prize is awarded for the best paper received by the Society on some subject of a technical nature in the science of aeronautics, preference being given to papers which relate to airships.)

The Busk Memorial Prize to Mr. A. Gouge, F.R.Ae.S., for his paper on "Some Problems in the Design of Seagoing Aircraft." (The Busk Memorial Prize is offered annually for the best paper received by the Society on some subject of a technical nature in connection with aeroplanes (including seaplanes).)

The Pilcher Memorial Prize to Mr. S G. Hooker, Student of the Society, for his paper on "The Compressibility Effects in High-Speed Air Flow." (The Pilcher Memorial Prize is awarded to a student of the Society for the best paper on any subject dealing with aeroplanes.)

At the conclusion of the presentation of the Society's awards, the Daniel Guggenheim Gold Medal for the year 1931 was presented to Dr. F. W. Lanchester, LL.D., F.R.S., Hon. F.R.Ae.S., for his contributions to the fundamental theory of aerodynamics. The presentation was made by Mr. Griffith Brewer, F.R.Ae.S., in his capacity as English representative of the Daniel Guggenheim Medal Board of Award.



THE AIRCRAFT LECTURE ROOM: The lecture rooms at the Air Service Training School at Hamble are a feature of the care with which the training is carried out. Our photograph here shows a stripped Avro fuselage, while in the background can be seen the tail end of a metal fuselage such as is used for the Avro Tutor aircraft upon which a great deal of the flying training is done. In this room the pupils are taught all about the constructional details of aircraft, the methods of assembling and truing up the various components such as wings and undercarriages. (FLIGHT *Photo.*)

AIRISMS FROM THE FOUR WINDS

Miss Amy Johnson Concludes Her Flight

As reported last week, Miss Amy Johnson and Mr. Humphreys arrived at Lympne in the "Puss Moth" *Jason II* from Tokio on September 9. She then proceeded to Croydon, where she landed shortly before 6 p.m., and thus concluded her return journey in 17 days—bad weather preventing her from completing it in six days, as originally intended. A large crowd, her mother and friends welcomed her, and Maj. Richard, chief aerodrome officer, greeted her officially. The Japanese Ambassador in London sent Miss Johnson the following telegram:—"At this moment of your safe arrival home I beg to express my sincere admiration and hearty congratulations upon the successful conclusion of a remarkable feat of skill, courage and perseverance through the air to and from Japan. I am sure that your flight has greatly stimulated the development of aeronautic art in my country."

ON TOUR: A Vickers "Vildebeest" torpedo bomber (Hispano-Suiza) fitted as a twin-float seaplane which is being sent on a tour of the ports of Northern Europe. It is being piloted by Capt. H. C. Biard.

Paris-Tokio Non-stop Flight Disaster

A DUAL attempt on the long-distance non-stop flight record made by France has ended, in one case, in disaster, and in the other in a failure. On September 11 the Breguet Grand Raid biplane *Question Mark*, piloted by Codos and Robidas, and the Dewoitine *Trait d'Union II* (Hyphen II), piloted by Le Brix and Doret, with Mesmin as mechanic, left Le Bourget early in the morning, within ten minutes of one another, with the object of flying non-stop to Tokio. The *Question Mark* was forced down through a leak in the petrol tank near Düsseldorf. The other machine, however, crashed in bad weather near Kaltassin, on the Russo-Siberian border, the following morning. Le Brix and Mesmin were killed, but Doret jumped in his parachute and was injured. The French Minister of Air has appointed a commission of experts to inquire into the disaster. Lord Amulree, Secretary of State for Air, has sent the following message to the French Minister for Air:—"On behalf of the Air Council I wish to convey our deep sympathy in the loss French aviation has sustained by the death of the gallant airmen, Le Brix and Mesmin."

Atlantic and Pacific Flyers Missing?

AT the time of writing it is feared that five airmen, three attempting an east to west Atlantic flight and two a Pacific flight, are missing. The former are Wily Rody and Christian Johansen, two Germans, and their Portuguese passenger, Costa Viega. They left Juncal, near Lisbon, in a Junkers aeroplane, on September 13, and were last seen on September 14 when they circled over the steamer *Pennland* 395 miles east of Halifax, Nova Scotia. Since then nothing more was seen of them, and aeroplanes and coastguard vessels were sent out to search for them. The other missing pilots are Allen and Moyle, two Americans, who left Tokio on September 8 to fly across the Pacific to Seattle, about 4,500 miles, where they were due at noon the following day. After having been reported some 2,600 miles across the Pacific, nothing more was heard of them. There being a possibility that they may have come down near the Aleutian Islands, coastguard vessels were sent out to search for the machine.

Aeroplane Aids Alpinists

WHEN five Alpinists recently lost their way on the Aiguilles Rouges d'Arolla, and were marooned for four days on a rock ledge, a military aeroplane succeeded in flying low over the ledge and dropped food and blankets to them.

OLD AND NEW: A 1914 R.A.F. Farman, and a 1931 R.A.A.F. Bristol "Bulldog." The Farman is owned by Mr. R. Graham Carey, of the Victorian Aero Club, who has had it re-conditioned for passenger carrying, etc. It is fitted with a 90 h.p. R.A.F. engine.

Do-X Struck by Lightning

DURING a severe storm in New York on September 14, the German flying-boat Do-X was struck by lightning. One of the crew was injured, but no damage was done to the machine.

Italian Schneider Pilot Killed

AN Italian racing machine, said to be one of those prepared for the Schneider Contest, and piloted by Lt. Bellini, crashed over Lake Garda on September 10, the pilot being killed.

Lord Amulree, Secretary of State for Air, sent the following message to His Excellency General Balbo, Italian Minister for Air:—

"On behalf of the Air Council and Royal Air Force, I offer you my deep sympathy in the loss of the gallant pilot Bellini."

THE ROYAL AIR FORCE

London Gazette, September 8, 1931.

General Duties Branch

The undermentioned are granted short service commns. as Pilot Officers for four years on active list with effect from and with seniority of Aug. 11 :—D. C. T. Bennett, A. C. Drew, N. B. Littlejohn, J. R. Paget, C. H. Smith. The undermentioned Pilot Officers are promoted to the rank of Flying Officer:—Aug. 3.—R. V. Alexander, E. J. P. Davy, J. G. Mansfield. Aug. 5.—B. E. Lowe (with seniority of Aug. 3).

The undermentioned are promoted with effect from Sept. 9 :—*Flying Officers to be Flight Lieutenants.*—T. H. Carr, N. C. Pleasance, J. H. Pool, W. G. Cheshire, H. A. Purvis, A. H. Owen, G. Bartholomew, L. L. King, D.F.C., H. J. G. E. Proud, L. T. Keens.

Flying Officer Bertram Isaac Carter is placed on retired list on account of ill-health (Sept. 3) ; Group Captain Arthur Vere Bettington, C.M.G., is placed on retired list (Sept. 6) ; the short-service commn. of Pilot Officer on probation Eric Stanley Macpherson is terminated on cessation of duty (Sept. 9) ; Flying Officer William Bernard John Sharp is dismissed the Service by sentence of General Court Martial (Aug. 26).

Stores Branch

The undermentioned are promoted with effect from Sept. 9 :—*Flight-Lieutenants to be Squadron Leaders.*—L. A. Lavender, K. D. G. Collier. *Flying Officers to be Flight-Lieutenants.*—H. E. Young, H. J. Young, M.B.E., F. A. R. Smith.

Flt./Lt. Archibald Thomas Shaw is placed on retired list (Sept. 4).

Director of Music

Captain Rudolf Peter O'Donnell, M.V.O. (R.M.), is granted a permanent commn. as Director of Music, R.A.F., in the rank of Flt./Lt., with effect from and with seniority of Sept. 1.

Memorandum

182841, Flt. Cadet Kenneth Charles Newbold Marshall is granted an honorary commn. as Sec. Lt. with effect from date of demobilisation.

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

The undermentioned Flying Officers are transferred from Class A to Class C :—A. M. Anderson, D.F.C. (May 22) ; Geoffrey Herbert Godwin (Aug. 29). Flying Officer Harry Alexander Dinnage is transferred from Class B to Class C (Dec. 12, 1930). Flt./Lt. Hazen Ottis Barnaby, M.B.E., relinquishes his commn. on completion of service (June 14). The undermentioned Flying Officers relinquish their commns. on completion of service :—A. Russell (May 15) ; T. A. Jackson (June 19) ; T. J. Tingley (June 29). Flying Officer Marion Hughes Aten, D.F.C., relinquishes his commn. on completion of service and is permitted to retain his rank (May 18).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified :—

General Duties Branch

Group Captain L. D. D. McKean, O.B.E., to H.Q., R.A.F., Halton, for Administrative duties, 31.8.31.

Squadron Leader E. B. Grenfell, A.F.C., to No. 10 Group H.Q., Lee-on-Solent, 3.8.31.

Flight-Lieutenants : J. V. Yonge, to No. 5 Flying Training School, Sealand, 31.8.31. C. Guppy, to No. 3 Sqdn., Upavon, 27.8.31. H. M. G. Parker, to No. 210 Sqdn., Pembroke Dock, 8.6.31. R. A. P. Roberts, to No. 2 Flying Training School, Digby, 17.8.31. J. F. Moir, to No. 22 Sqdn., Martlesham Heath, 24.8.31.

Flying Officers : R. J. P. Morris, to R.A.F. Practice Camp, Sutton Bridge, 24.8.31. J. Marson, to No. 2 Flying Training School, Digby, 24.8.31. W. N. Blain, to No. 3 Flying Training School, Grantham, 24.8.31. D. G. P. Fitzpatrick, to R.A.F. Depot, Uxbridge, 19.7.31. H. G. Adams, to R.A.F. Depot, Uxbridge, 11.8.31. C. F. G. Adye, to R.A.F. Depot, Uxbridge, 30.6.31. R. S. Darbyshire, to No. 604 Sqdn., Hendon, 24.8.31. J. E. Markby, to No. 504 Sqdn., Nottingham, 18.8.31. A. E. Dark to Central Flying School, Wittering, 17.8.31. D. S. McDougall to Central Flying School, Wittering, 1.9.31. G. E. Sampson, to Station H.Q., Duxford, 19.8.31. G. F. P. O'Farrell, to Station H.Q., Upper Heyford, 21.8.31. J. A. Powell, to Station H.Q., Upper Heyford, 24.8.31. S. S. Murray to Station H.Q., Upper Heyford, 21.8.31. G. R. White, to No. 500 Sqdn., Manston, 1.9.31. C. N. McLoughlin, to R.A.F. Record Office, Ruislip, 7.8.31.

Pilot Officers : S. G. Graham, to No 2 Flying Training School, Digby, 22.8.31. B. A. Fraser, to No. 210 Sqdn., Pembroke Dock, 1.6.31. G. V. Barber, to No. 13 Sqdn., Netheravon, 28.8.31.

Stores Branch

Flight-Lieutenant : R. V. J. S. Hogan, to No. 4 Stores Depot, Ruislip, 31.8.31.

Medica Branch

Squadron Leaders : A. J. O. Wigmore, to Marine Aircraft Experimental Estab., Felixstowe, 9.9.31. G. S. Marshall, O.B.E., to Central Medical Estab., 14.9.31. D. McLaren, to R.A.F. Depot, Uxbridge, 7.9.31.

Flight-Lieutenants : A. F. Cook, to Station H.Q., Andover, 3.9.31. J. D. I. Rear to R.A.F. Hospital, Cranwell, 1.9.31. P. H. Perkins, to Medical Training Depot, Halton, 7.9.31. F. E. Lipscomb, to R.A.F. Pathological Lab., Halton, 7.9.31. A. S. Burns, to Station H.Q., Northolt, 14.9.31.

Chaplains' Branch

The Revd. R. D. Grange-Bennett, to R.A.F. Base, Gosport, 1.9.31.

NAVAL APPOINTMENTS.

The following appointments have been made by the Admiralty :

LIEUTS. (F./O., R.A.F.).—H. C. Toppin, to S./M. M.2 ; J. P. G. Bryant and C. L. Keighley-Peach, to *Victory*, for full flying duties in 408 Flight, and T. G. Carey, to *Courageous*, for full flying duties in 407 Flight (Sept. 21.)

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AIR MINISTRY NOTICES

AIR MINISTRY NOTICES TO GROUND ENGINEERS.

No. 50 of the year 1931. Use of Aircraft for Towing Gliders. (119966/31.)

Only aircraft specifically approved for the purpose are to be used for towing gliders.

When such approval is required application is to be made in the first instance to the Secretary, Air Ministry (C.A.2), Adastral House, Kingsway, London, W.C.2, and at the same time full details of the proposed scheme are to be forwarded to the Chief Superintendent, Royal Aircraft Establishment, Farnborough, marked for the attention of the Airworthiness Department.

Before approval is given it will be ascertained that the structure has an adequate margin of strength under loads from the towing cable, and that the control of the aircraft will not be endangered when the pull on the aircraft from the towing cable acts in any reasonably probable direction.

A weak link, which shall break at some predetermined load, is to be included in the towing cable near its point of attachment to the towing aircraft, the load referred to being fixed after consideration of the details of the towing arrangement proposed.

Quick releases, under the control of the pilots of the aircraft and glider respectively, are to be fitted at both ends of the towing cable.

Suitable provision is to be made to guard against the tow rope fouling any part of the aircraft, both when under load and when released or slackened by the glider overtaking the aircraft.

(September 10, 1931.)

No. 51 of the year 1931. D.H. 60X. G. & M. and D.H. 80A Aircraft : Ball Bearing on Control Column. (60361/30.)

A case has occurred where one of the ball bearing housings (Part No. H. 11275) on either side of the control column at the connection to the torque shaft, has been found to have developed a circumferential crack.

These ball race housings should, therefore, be inspected immediately for signs of such cracks, and further inspections should be carried out at frequent intervals.

The housing referred to is a pressing from 18*g* or 20*g* M.S. plate. Where this is found to be defective it should be replaced by a machined part (Issue 10 to Drawing No. H.11275), which can be obtained from The de Havilland Aircraft Co., Ltd., Edgware, Middlesex.

(September 12, 1931.)

No. 52 of the year 1931. Notification of Change of Address. (926069/29.)

The attention of recipients of Notices to Aircraft Owners and Ground Engineers is drawn to the inconvenience and delay frequently caused by copies of the Notices failing to reach the person to whom they are sent owing to a change of address not having been notified to the Air Ministry.

Notification of any change of address, with a reference to the No. of the Ground Engineer's Licence held, if any, should be sent without delay to the Secretary (C.A.2), Air Ministry, Kingsway, London, W.C.2.

Recipients who frequently move from place to place should, if possible, arrange for the Notices to be forwarded on to them from some permanent address.

The Air Ministry cannot accept responsibility for a person's lack of acquaintance with information or instructions contained in the Notices in cases where a change of address has not been notified.

(September 14, 1931.)

AIR MINISTRY NOTICES TO AIRMEN. SERIES A

No. 55 of the year 1931. Norway : Adherence to International Air Convention. (123527/31.)

The Government of Norway adhered on July 1, 1931, to the International Convention relating to the Regulation of Air Navigation, dated October 13, 1919.

This adherence will involve the denunciation of the air agreement between Norway and Great Britain, dated July 15, 1921, and the supplementary agreement, dated February 22, 1923.

The following Notices to Airmen, Series A, 1931, should now be regarded as cancelled :—

Nos. 9, 10, 14, 17, 19-21, 23, 25, 30, 32, 36, 37, 42 (except amendment to Series A, No. 22/1931), 44, 49, 50 and 52.

(September 11, 1931.)

No. 56 of the year 1931. Merstham Air Route Beacon : Installation of. (25591/30.)

An air route beacon, marking the entrance to the Merstham-Coulsdon-Purley valley, will commence operation as from sunset on Monday, September 14, 1931.

Reports from pilots showing the maximum range of visibility of the beacon and the ease with which it can be distinguished as a beacon under varying atmospheric conditions, will be of value, and should be rendered to the Secretary (C.A.4) Air Ministry, Adastral House, London, W.C.2.

The position of the light is Lat. 51° 17′ N. Long. 0° 09′ W. Immediately over the railway tunnel, 1 mile North of Merstham and 5½ miles South by West of Croydon aerodrome. Its character is one white group, flashing, revolving, 5·6 sec. Visibility 50 miles. Height above ground level, 37 ft. Height above sea level, 567 ft. It is a red brick conical tower, 36 ft. high. Operated by day under conditions of bad visibility, and by night from sunset to sunrise, exhibiting the letter " M " thus : Light 1·2 sec. ; eclipse 0·4 sec. Light 1·2 sec. ; eclipse 2·8 sec.

(September 12, 1931.)

THE INDUSTRY

Aids to Performance

THE accessories and materials in such an aircraft as the Vickers-Supermarine S.6B. play a very important part, and naturally they must be of the highest quality and the best which can be obtained for the job.

One of the hardest tried is the airscrew, and, as in the last contest, this was again of the Fairey forged duralumin type. These airscrews follow perfectly normal processes of design, although, as they are required for extreme conditions, they themselves may appear to be somewhat abnormal. Those used this year had certain refinements of shape produced for blending the blades into the nose of the spinner. The regulations this year, which increased the take-off weight, made the airscrew designer's job still more difficult, as he had to guarantee a certain take-off. Considerably more starting thrust was therefore required, and this was obtained without sacrifice of top speed efficiency, by operating on the plan form of the blades. The makers state that, as far as they are concerned, there is still no limit in sight to maximum speed, and, whatever power the engine makers produce, they are confident of converting it efficiently into thrust.

The Lodge type X.170 plug used both for the Schneider Contest and the Speed Record.

Lodge Plugs are used in the Rolls-Royce engines, both for the Schneider Contest and for the Speed Record. This is in keeping with the experience the engine makers had with these plugs in both similar events of 1929.

No small part in the efficiency of the aircraft was played by the super-finish on the surface of the fuselage wings and floats. This year a new form of cellulose lacquer, called "Procelloid," was supplied by John Hall & Sons, of Bristol. This was sprayed on and then polished by hand, the resulting gloss being the same as that obtained on motor-car body work, and that in spite of the exceptional difficulties which were encountered, such as the corrosive effect of the exhaust fumes.

The English Steel Corporation of Sheffield supplied a drop forging, from which one of the most vital parts of the engine, namely, the crankshaft, was machined. Furthermore, their "Immaculate" Stainless Steels were used in making a very large number of the aircraft parts. The use of such steel obviates troubles due to corrosion, a matter which is very important for seaplane work.

Hoffmann ball and roller bearings also contributed towards the easy working of such parts of the machines as were fitted with anti-frictional bearings. These bearings are, of course, of all-British manufacture, and they have been used in a very large number of successful aerial record flights.

A material upon which a very great deal of experimental work has to be done before it is suitable for such a purpose is the fuel used in the engine. This was a composite fuel supplied by Pratts, having in it Ethyl and alcohol.

To supply the necessary current to operate the sparking plugs, B.T.H. magnetos were fitted, and naturally did not miss throughout either flight.

A Change of Address

WILL readers please note that Bosch, Ltd.—of magneto fame—have changed their London address to:—Larden Road, Acton, W.3. Telephone: Shepherds Bush 2080. Telegrams: Elecbright, Act., London.

De Havilland in South Africa

"AVIATION IN AFRICA" for July, 1931, gives a table showing all the aircraft registered in the Union and South-West Africa up to June 11. An analysis of this shows that aircraft which emanate from the De Havilland factory at Stag Lane are by far the most used and form a large percentage of all the aircraft out there. Actually, 50 are listed, of which 25 are "Moths" and eight "Puss Moths," while the remaining 17 represent no less than eight different types.

IMPORTS AND EXPORTS

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910).

For 1910 and 1911 figures see FLIGHT for January 25, 1912.
For 1912 and 1913, see FLIGHT for January 17, 1914.
For 1914, see FLIGHT for January 15, 1915, and so on yearly, the figures for 1930 being given in FLIGHT, January 16, 1931.

	Imports.		Exports.		Re-exports.	
	1930.	1931.	1930.	1931.	1930.	1931.
	£	£	£	£	£	£
Jan.	...2,987	7,965	147,935	142,596	—	1,074
Feb.	...2,460	3,303	226,049	110,587	1,000	1,293
Mar.	... 744	5,615	156,098	83,088	802	3,441
April	...2,959	2,216	213,390	213,401	79	530
May	11,706	1,964	158,460	275,382	2,550	198
June	15,029	6,780	252,443	78,298	1,060	361
July	14,216	1,790	170,594	177,006	938	131
Aug.	5,382	3,556	146,564	153,834	6,912	2,316
	55,483	33,189	1,471,533	1,234,192	13,341	9,344

PUBLICATIONS RECEIVED

Gazetteer of British Meteorological Stations Used in the Preparation of Synoptic Report. M.O. 319. H.M. Stationery Office, Kingsway, London, W.C.2. Price 8s. net.

The Light Aeroplane Manual. By F. D. Bradbrooke. London: Chapman & Hall, Ltd. Price 10s. 6d. net.

Aircraft Depôt Magazine. Vol. 1, No. 3. Aircraft Depôt, Karachi, India.

The Pageant of Transport Through the Ages. By W. H. Boulton. London: Sampson Low, Marston Co., Ltd. Price 12s. 6d. net.

Technical Report of the Aeronautical Research Committee, 1929-30. Vol. I, Aerodynamics. Vol. II, Stability and Control, Spinning, Materials, Engines, etc. London: H.M. Stationery Office, W.C.2. Price £1 17s. 6d. each, net.

Air Transport Operation. By Wesley L. Smith. London: McGraw-Hill Publishing Co., Ltd. Price 20s. net.

Catalogue

Saro Amphibian Aircraft. Saunders-Roe, Ltd., Cowes, Isle of Wight.

AERONAUTICAL PATENT SPECIFICATIONS

(*Abbreviations*: Cyl. = cylinder; i.c. = internal combustion; m. = motors. The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1930

Published September 17, 1931

14,991. J. DE LA CIERVA. Aircraft with rotative wings. (355,226.)
15,975. W. E. GRAY. Undercarriages for aeroplanes. (355,348.)
16,790. M. L. BRAMSON. Internal-combustion engines using wobbler or swash-plate driving gear. (355,384.)
21,119. WOLSELEY MOTORS (1927), LTD., and E. S. LUYKS. Master connecting-rods of radial engines. (355,450.)
30,274. SPERRY GYROSCOPE CO., INC. Automatic steering-devices for dirigible craft. (355,566.)
32,819. G. FISCHER and E. MULLER. Electric switch mechanism for use in aircraft, &c. (355,586.)
39,027. LUFTSCHIFFBAU ZEPPELIN GES. Framework girders for light constructions such as are used in aircraft. (355,627.)

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